

AD-755 429

BIBLIOGRAPHY ON SHOCK WAVES IN SOLIDS

D. L. Lehto

Naval Ordnance Laboratory
White Oak, Maryland

17 November 1972

DISTRIBUTED BY:

NTIS

National Technical Information Service
U. S. DEPARTMENT OF COMMERCE
5285 Port Royal Road, Springfield Va. 22151

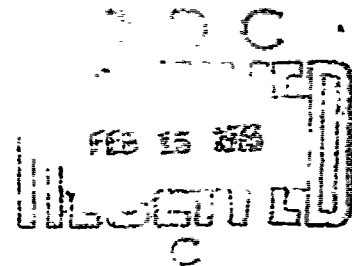
AD 755429

NOLTR 72-274

BIBLIOGRAPHY ON SHOCK WAVES IN SOLIDS

By
D. L. Lehto

17 NOVEMBER 1972



NOL

NAVAL ORDNANCE LABORATORY, WHITE OAK, SILVER SPRING, MARYLAND

NOLTR 72-274

APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION UNLIMITED

NATIONAL TECHNICAL
INFORMATION SERVICE

149

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) Naval Ordnance Laboratory Silver Spring, Maryland 20910		2a. REPORT SECURITY CLASSIFICATION Unclassified	
		2b. GROUP	
3. REPORT TITLE BIBLIOGRAPHY ON SHOCK WAVES IN SOLIDS			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)			
5. AUTHOR(S) (First name, middle initial, last name) D. L. Lehto			
6. REPORT DATE 17 November 1972		7a. TOTAL NO. OF PAGES 147	7b. NO. OF REFS
8a. CONTRACT OR GRANT NO.		8b. ORIGINATOR'S REPORT NUMBER(S) NOLTR 72-274	
9. PROJECT NO. ORD 333-001-201-23(1) NOL-370/ARPA		9d. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
d.			
10. DISTRIBUTION STATEMENT Approved for public release; distribution unlimited.			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY Naval Ordnance Systems Command Washington, D. C. 20360	
13. ABSTRACT About 850 references are given to books, articles, and reports on theoretical and experimental aspects of shocks in solids. The topics include computer codes, composite media, and equations of state.			

DD FORM 1473

NOV 68

(PAGE 1)

S/N 0101-807-680;

UNCLASSIFIED

Security Classification

ILL

Security Classification

Snock Waves
Equations of State
Bibliographies

Ib

NOLTR 72-274

BIBLIOGRAPHY ON SHOCK WAVES IN SOLIDS

Prepared by:
D. L. Lehto

ABSTRACT: About 850 references are given to books, articles, and reports on theoretical and experimental aspects of shocks in solids. The topics include computer codes, composite media, and equations of state.

Air/Ground Explosions Division
Explosions Research Department
NAVAL ORDNANCE LABORATORY
Silver Spring, Maryland

IC


NOLTR 72-274

17 November 1972

Bibliography on shock waves in solids.

Support for this work was provided by the Naval Ordnance Systems Command under Work Unit Number ORD333-G01-201-23(1), Reentry Vehicle Materials Technology, and by the Advanced Research Projects Agency under Project NOL-370/ARPA, Amorphous Semiconductor Devices.

R. WILLIAMSON II
Captain, USN
Commander


C. J. ARONSON
By direction

CONTENTS

I. INTRODUCTION.	1
II. WAVES IN SOLIDS.	2
A. Bibliographies	2
B. Theory	3
1. Shock Velocity vs Particle Velocity	20
2. Similarity Solutions.	21
C. Computer Codes	22
1. PUFF.	22
2. WONDY	23
3. TOODY	24
4. K. and HEMP	24
5. EIK	25
6. SOC	25
7. TRANSOR.	25
8. MCDIT	26
9. HELP.	26
10. Electron Deposition	26
11. Various Codes	27
D. Special Configurations and Effects	31
1. Bars.	31
2. Laminated Media	35
3. Composite Media	37
4. Spalling.	43
5. Spherical Waves	45
E. Experimental Methods	47
1. Reviews	47
2. Ultrasonics	48
3. Static Loading.	49
4. Dynamic Loading	50
a. Some Results	52
b. Electromagnetic Velocity Gage.	53
c. Pulsed Electron Beam	54
d. Unfocused Laser Beam	58

CONTENTS (cont'd)

III. EQUATIONS OF STATE.	61
A. Theory	61
B. Collections of Data.	73
C. Metals	75
1. Miscellaneous Metals.	75
2. Alkali Metals	76
3. Aluminum.	77
4. Copper.	81
5. Iron.	83
6. Lead.	85
7. Steel	86
8. Tantalum.	87
9. Tungsten.	88
D. Porous Materials	89
E. Non-Metals	92
1. Miscellaneous Non-Metals.	92
2. Alkali Halides.	94
3. Carbon.	97
4. Germanium	98
5. Glass	99
6. Oxides.	100
7. Polymers.	102
8. Quartz and Silica	104
9. Rocks and Soils	105
10. Silicon	113
IV. AUTHOR INDEX	114
V. INDEX OF SOME SPECIAL TOPICS.	141

I. INTRODUCTION

This collection consists of material examined by the author as background for his work on the Amorphous Semiconductor Devices and the Reentry Vehicle Materials Technology (REVMAT) tasks.

This is not an exhaustive compendium on shock waves in solids; however, the author's colleagues have found it extensive enough to be useful to them. The strongest sections are those on computer codes and waves in composite materials. There are some conspicuous omissions: e.g., shock-induced phase changes and dislocations are not covered. For extensive references on hypervelocity impact, see Kinslow's recent book (p. 16).

These references consist of books, journal articles, and laboratory reports. This last category is rather incomplete; only those reports that I have been able to obtain relatively easily and that have no distribution limitations are listed. Items with an AD or PB number may be obtained from NTIS. The parenthetical remarks are mine except where they are enclosed in quotation marks. The absence of remarks implies either that the title is adequately descriptive or that I can't think of anything to say.

The format of the author index can be readily discovered by the reader.

II. WAVES IN SOLIDS

A. Bibliographies

- Stromer, P.R. "Shock Wave Propagation in Solids: An Annotated Bibliography," Lockheed MSC Special Bibl. SB-63-31, AD419449, 61pp, Mar 1963.
- Christman, D.R. "A Selected Bibliography on Dynamic Properties of Materials," General Motors Technical Center MSL-70-06, DASA-2511, AD710823, 112pp, Jun 1970.
- Anon "Bibliography on High Pressure Research," High Pressure Data Center, 574 Clark Library, Brigham Young University, Provo, Utah 84601. (Volume V, 1972, is in six issues.)

B. Theory (before 1960)

- Mason, W.P. "Energy Losses of Sound Waves in Metals Due to Scattering and Diffusion," J.Appl.Phys. 19:940-946 (1948).
- McSkimin, H.J.
- DeJuhasz, K.J. "Graphical Analysis of Impact of Bars Stressed Above the Elastic Range," J.Franklin Inst. 248:15-48 & 113-142 (1949). (Includes bibliography on impact.)
- Murnaghan, F.D. "The Foundations of the Theory of Elasticity," in Proc. Symposia Appl.Math. I. Non-Linear Problems in Mechanics of Continua (Am.Math.Soc., 1949) pp 158-174.
- Kolsky, H. Stress Waves in Solids (Clarendon, Oxford, 1953, reprinted by Dover.)
- Murnaghan, F.D. Finite Deformation of an Elastic Solid (Wiley, N.Y., 1951, 140pp.) (Rather unfavorably reviewed by Truesdell in Bull.Am.Math.Soc. 58:577-9 (1952).)
- Blake, F.G., Jr. "Spherical Wave Propagation in Solid Media," J.Acoust.Soc.Am. 24:211-215 (1952).
- Wood, D.S. "On Longitudinal Plane Waves of Elastic-Plastic Strain in Solids," J.Appl.Mech. 19:521-525 (1952).
- Malvern, L.E. "Plastic Wave Propagation in a Bar of Material Exhibiting a Strain Rate Effect," Quart.Appl.Math. 8:405-411 (1951).
- Davies, R.M. "Stress Waves in Solids," in G.K. Batchelor & R.M. Davies (eds.) Surveys in Mechanics (Cambridge, 1956) pp 64-138.
- Deresiewicz, H. "Plane Waves in a Thermoelastic Solid," J.Acoust.Soc.Am. 29:204-9 (1957).
- Drummond, W.E. "Multiple Shock Production," J.Appl.Phys. 28:998-1001 (1957). (Shocks in solids with phase transitions. Two compression shocks and a rarefaction shock are produced.)
- Thomas, T.Y. "The Decay of Waves in Elastic Solids," J.Math.Mech. 6:759-768 (1957).
- Bowsher, J.M. "On 'Plastic' Waves in Solids," Can.J.Phys. 37:1017-35 (1959).
- Morland, L.W. "The Propagation of Plane Irrotational Waves Through an Elastoplastic Medium," Phil.Trans.Roy.Soc.London A251:341-383 (1959).
- Musgrave, M.J.P. "The Propagation of Elastic Waves in Crystals and Other Anisotropic Media," Reports Prog.Phys. XXII:74-96 (1959).

B. Theory (before 1960, cont'd)

- White, M.P.
Griffis, L. "The Propagation of Plasticity in Uniaxial Compression,"
J.Appl.Mech. 15:256-260 (1948).
- White, M.P. "On the Impact Behavior of a Material With a Yield Point,"
J.Appl.Mech. 16:39-52 (1949).
- Lee, E.H.
Wolf, H. "Plastic-Wave Propagation Effects in High-Speed Testing,"
J.Appl.Mech. 18:379-386 (1951).
- Lee, E.H.
Tupper, S.J. "Analysis of Plastic Deformation in a Steel Cylinder
Striking a Rigid Target," J.Appl.Mech. 21:63-70 (1954).
- Davies, R.M. "Stress Waves in Solids,"
Appl.Mech.Rev. 6:1-3 (1953). (Review article; 99 refs.)
- Hazebrook, P. "Elastic Waves From a Finite Line Source,"
Proc.Roy.Soc. A294:38-65 (1966).
(The source is taken as the limit of an elongated
ellipsoid of revolution loaded on the inside with
a pressure that is a function of time.)
- Jordan, D.W. "The Stress Wave from a Finite, Cylindrical Explosive
Source," J.Math.Mech. 11:503-551 (1962).
(A uniform constant pressure is applied to a finite
length of an infinite cylinder. The elastic wave is
calculated by a double Fourier integral technique.)
- Lessen, M. "Thermoelastic Waves and Thermal Shock,"
J.Mech.Phys.Solids 7:77-84 (1959). -U.Penna.-
- Knopoff, L.
MacDonald, G.J.F. "Attenuation of Small Amplitude Stress Waves in Solids,"
Rev.Mod.Phys. 30:1178-92 (1958). -UCLA-
- Ericksen, J.L. "On the Propagation of Waves in Isotropic Incompressible
Perfectly Elastic Materials,"
J.Rat.Mech.Anal. 2:329-337 (1953).
- Timoshenko, S. "The Propagation of Waves in Elastic Solid Medium,"
Chapter 12 of Theory of Elasticity (McGraw-Hill, N.Y.,
1934).

B. Theory (cont'd; 1960-1963)

- Hwang, S.-Y.
Davids, N. "Graphical Analysis of the Formation of Shock Fronts in Materials," J.Mech.Phys.Solids 8:52-65 (1960).
- Herrmann, W.
et al "Stress Wave Propagation and Spallation in Uniaxial Strain," Mass.Inst.Tech. Technical Documentary Report No. ASD-TDR-62-399, AD288885, 125pp, Sep 1962.
- Truesdell, C. "General and Exact Theory of Waves in Finite Elastic Strain," Arch.Rat.Mech.Anal. 8:263-296 (1961).
- Flavin, J.N.
Green, A.E. "Plane Thermo-Elastic Waves in an Initially Stressed Medium," J.Mech.Phys.Solids 9:189-190 (1961). -Kin. C.- (Small-amplitude waves in infinite body prestressed by extension in all directions.)
- Shewmon, P.G.
Zacksy, V.P.
(eds.) Response of Metals to High Velocity Deformation (Interscience, N.Y., 1961). (Metallurgical Society Conference, Estes Park, Colo., July 11-12, 1960).
- Chadwick, P. "On the Propagation of Thermoelastic Disturbances in Thin Plates and Rods," J.Mech.Phys.Solids 10:99-109 (1962).
- Chadwick, P. "Propagation of Spherical Elastic-Plastic Disturbances From an Expanded Cavity," Quart.J.Mech.Appl.Math. X7:349-376 (1962).
- Duvall, G.E. "Shock Waves in the Study of Solids," Appl.Mech.Revs. 15:849-854 (1962).
- Harris, P. "Decay of Elastic Precursor Waves," J.Appl.Phys. 34:3405 (1963). -NOL-
- Huang, Y.K.
Davids, N. "Shock Dynamics of Hypervelocity Impact of Metals," J.Franklin Inst. 276:39-50 (1963). -S.Dak.St.Coll.- (Elementary analysis.)
- Kolsky, H. "Stress Waves in Anelastic Solids," J.Geophys.Res. 68:1193-4 (1963). -Brown U.-
- Duvall, G.E.
Fowles, G.R. "Shock Waves," in R.S. Bradley (ed.), High Pressure Physics and Chemistry (Academic Press, N.Y., 1963) pp 209-291.
- Miklowitz, J. "Transient Wave Propagation in Elastic Rods and Plates," J.Geophys.Res. 68:1190-2 (1963). -CIT-
- Jones, G.L.
Robett, D.R. "Interaction of Elastic Waves in an Isotropic Solid," J.Acous.Soc.Am. 35:5-10 (1963).
- Hopkins, H.G. "Dynamic Anelastic Deformation of Metals," Appl.Mech.Revs. 14(6):417-431 (1961).
- Band, W. "Studies in the Theory of Shock Propagation in Solids," J.Geophys.Res. 65:695-719 (1960).

B. Theory (cont'd; 1960-1963)

- Miklovitz, J. "Recent Developments in Elastic Wave Propagation,"
Appl.Mech.Rev. 13:865-78 (1960). -CIT-
(Review article; 135 refs.)
- Hill, R. "Acceleration Waves in Solids,"
J.Mech.Phys.Solids 10:1-16 (1962).
- Truell, R. "High Frequency Ultrasonic Stress Waves in Solids,"
Elbaum, C. in S. Flügge (ed.), Handbuch der Physik, Band XI/2,
Akustik II (Springer-Verlag, Berlin, 1962) pp 153-258.
- Duvall, G.E. "Concepts of Shock Wave Propagation,"
Bull.Seism.Soc.Am. 52:869-893 (1962). -SRI-
(Tutorial article.)

B. Theory (cont'd; 1964-1965)

- Achenbach, J.D. "Approximate Transient Solutions for the Coupled Equations of Thermoelasticity," J.Acoust.Soc.Am. 36:10-18 (1964). -NWU-
- Harris, P. "Decay of Elastic Waves in Solids with Dislocations,"
Greene, R.F. J.Appl.Phys. 35:2170-3 (1964). -NOL-
- Bland, D.R. "Dilatational Waves and Shocks in Large Displacement Isentropic Dynamic Elasticity," J.Mech.Phys.Solids 12:245-267 (1964).
(Includes numerical solution for spherical tensile explosion.)
- Erkman, J.O. "Elastoplastic Effects in the Attenuation of Shock Waves," Proc. Fourth Sympos. Detonation 277-288 (1965). -SRI-
- Butcher, B.M. "The Influence of Mechanical Properties on Wave Propagation
Munson, D.E. in Elastic-Plastic Materials," Proc. Fourth Sympos. Detonation 295-304 (1965). -Sandia-
- Erkman, J.O. "Elastoplasticity and the Attenuation of Shock Waves,"
Duvall, G.E. Proc. Ninth Midwestern Mech.Conf. 179-183 (1965). -SRI-
- Konstantinov, G.G. "Wave Propagation in a Finite Elastoplastic Bar with
Marchenko, L.L. Longitudinal Impact," Combustion, Explosion, and
Shkhinek, K.N. Shock Waves 1:39-42 (1965).
- Lindholm, U.S. "Wave Propagation in an Elastic Nonhomogeneous Bar of
Doshi, K.D. Finite Length," J.Appl.Mech. Mar 1965, 135-142. -SWRI-
(Continuously varying modulus of elasticity.)
- Bland, D.R. "On Shock Structure in a Solid," J.Inst.Maths.Applics. 1:56-75 (1965). -U.Manch.-
(With 2nd order convective & dissipative effects.)
- Al'tshuler, L.V. "Use of Shock Waves in High-Pressure Physics," Soviet Physics-Uspexhi 8:52-91 (1965).
- McDowell, E.L. "Deviatoric Effects in High Intensity Stress Waves," IIT Res. Inst., AFWL-TR-65-15, AD620334, 76pp, Aug 1965.
- Heyda, J.F. "Peak Axial Pressures in Semi-Infinite Media Under
Riney, T.D. Hypervelocity Impact," GE Space Sci. Lab. R64SD87, Reprint No. 290, 46pp, Nov 1964.

B. Theory (cont'd; 1964-1965)

- Riney, T.D.
Heyda, J.F. "Hypervelocity Impact Calculations and Their Correlation With Experiment," GE Space Sci. Lab. R64SD64, AD606123, 53pp, Sep 1964.
- Chu, B.-T. "Finite Amplitude Waves in Incompressible Perfectly Elastic Materials," J.Mech.Phys.Solids 12:45-57 (1964).
- Green, W.A. "The Growth of Plane Discontinuities Propagating into a Homogeneously Deformed Elastic Material," Arch.Rat.Mech.Anal. 16:79-88 (1964).
- Thurston, R.N. "Wave Propagation in Fluids and Normal Solids," in W.P. Mason (ed.), Physical Acoustics, Volume 1-Part A (Academic Press, N.Y., 1964) pp 1-110. (Small-amplitude waves.)
- Coleman, B.D.
Gurtin, M.E.
Herrera R., I. "Waves in Materials with Memory," Arch.Rat.Mech.Anal. 19:1-19, 239-265, 266-298, 317-338 (1965).
- Gylden, N. "On the Similarity Between Compressible, Nonviscous Flows in Metals," J.Appl.Phys. 36:2082 (1965).
- Valanis, K.C. "Propagation and Attenuation of Waves in Linear Viscoelastic Solids," J.Math.&Phys. 44:227-239 (1965).
- Varley, E. "Acceleration Fronts in Viscoelastic Materials," Arch.Rat.Mech.Anal. 19:215-225 (1965).
- Wallace, D.C. "Lattice Dynamics and Elasticity of Stressed Crystals," Rev.Mod.Phys. 37:57-67 (1965). -Sandia-
- Varley, E.
Dunwoody, J. "The Effect of Non-Linearity at an Acceleration Wave," J.Mech.Phys.Solids 13:17-28 (1965).

B. Theory (cont'd; 1966)

- Clifton, R.J.
Bodner, S.R. "An Analysis of Longitudinal Elastic-Plastic Pulse Propagation," J.Appl.Mech. 33:248-255 (1966).
(Long uniform bar loaded by short pulse at end.)
- Mehta, P.K.
Davids, N. "A Direct Numerical Analysis Method for Cylindrical and Spherical Elastic Waves," AIAA J. 4:112-7 (1966).
(See corrections in AIAA J. 9:1387-8 (1971).)
- Pearson, J.C. "Hydrodynamic Elastic Plastic Theory and Plane Shock Waves in Metals," Picatinny Arsenal, AD634630, 15pp, Jun 1966. (Apparently from conference proceedings.)
- Tsai, D.H.
Beckett, C.W. "Shock Wave Propagation in Cubic Lattices," J.Geophys.Res. 71:2601-6 (1966).
- Butcher, B.M.
Karnes, C.H. "Strain-Rate Effects in Metals," J.Appl.Phys. 37:402-411 (1966). -Sandia-
- Doran, D.G.
Linde, R.K. "Shock Effects in Solids," in Solid State Physics, Advances in Research and Applications, Volume 12 (Academic Press, N.Y., 1966). -SPI-
- Collins, W.D. "One-Dimensional Non-Linear Wave Propagation in Incompressible Elastic Materials," Quart.J.Mech.Appl.Math. XIX:259-288 (1966).
- Zababekhin, E.I.
Simonenko, V.A. "Discontinuities of Shock Adiabats and the Non-Uniqueness of Some Shock Compressions," Soviet Physics-JETP 25:876-7 (1967).
- Harris, P. "Weak Shocks in Solids," J.Acoust.Soc.Am. 40:226-9 (1966).
(Burgers equation is used.)

B. Theory (cont'd; 1967)

- Fine, A.D. "On Elastic-Plastic Wave Propagation,"
J. Franklin Inst. 283:203-213 (1967).
(Unloading waves.)
- Lee, E.H. "Analysis of the Propagation of Plane Elastic-Plastic
Wierzbicki, T. Waves at Finite Strain," J. Appl. Mech. 34:931-6 (1967).
- Lee, E.H. "Finite-Strain Elastic-Plastic Theory with Application
Liu, D.T. to Plane-Wave Analysis," J. Appl. Phys. 38:19-27 (1967).
("In the generation of plane waves in metal plates by
detonation of contact explosives, the pressures reached
can be sufficiently high to produce finite elastic and
plastic strain components, and appreciable changes in
temperature due to thermomechanical coupling effects. A
theory of elastic-plastic deformation is developed to
include these conditions....")
- Collins, W.D. "The Propagation and Interaction of One-Dimensional Non-
Linear Waves in an Incompressible Isotropic Elastic Half-
Space," Quart. J. Mech. Appl. Math. 20:429-452 (1967).
- Chou, P.C. "Solution of One-Dimensional Elastic Wave Problems by the
Mortimer, R.W. Method of Characteristics,"
J. Appl. Mech. 34:745-750 (1967).
(numerical integration; medium may be nonhomogeneous.)
- Gurtin, M.E. "Extrinsically Induced Acceleration Waves in Elastic
Walsh, E.K. Bodies," J. Acoust. Soc. Am. 41:1320-4 (1967).
- Chou, P.C. "Late-Stage Equivalence in One-Dimensional Impact,"
Burns, B.P. J. Appl. Phys. 38:553-560 (1967).
(Method of characteristics calculations for aluminum and
copper.)
- Clifton, R.J. "A Difference Method for Plane Problems in Dynamic
Elasticity," Quart. Appl. Math. 25:97-116 (1967).
(Same as Lax-Wendroff scheme for interior points.)

B. Theory (cont'd; 1968)

- Dremin, A.N.
Breusov, O.N. "Processes Occurring in Solids Under the Action of Powerful Shock Waves," Russ.Chem.Revs. 37:392-402 (1968). (Effects of shear on reactions.)
- Francis, P.H.
Lindholm, U.S. "Effect of Temperature Gradients on the Propagation of Elastoplastic Waves," J.Appl.Mech. Sep 1968, 441-8.
- Bert, C.W.
Cummings, B.E. "Some Strong Wave Problems in an Elastic Material With Microstructure," General Research Corp., Santa Barbara, GR-0484-1, AD680236, 58pp, Jun 1968.
- Clifton, R.J.
et al "The Elastic-Plastic Boundary in One-Dimensional Wave Propagation," Stanford Res.Inst., BRL-CR-9, AD674755, 10pp, Feb 1968.
- Nen, N. "Elastic-Plastic Waves for Combined Stresses," Stanford U., Dept. of Appl.Mech., Tech.Report 184, AD678480, 84pp, Jul 1968. (For BRL).
- Shieh, R.C. "Analysis of Wave Propagation in a Nonlinear Strain-Hardening Medium," U.Calif. San Diego, DASA-2164, AD679653, 40pp, Sep 1968.
- Grot, R.A. "Relativistic Theory of the Propagation of Wave Fronts in Non-Linear Elastic Materials," Int.J.Engg.Sci. 6:295-307 (1968). -Peru- ("Relations generalizing the classical results of nonlinear elasticity are derived for the existence of wave fronts and specific results for the wave velocity propagating along a principal direction are given for isotropic materials.")

B. Theory (cont'd; 1968)

- Duvall, G.E. "Shock Waves in Solids," in B.M. French & N.M. Short (eds.), Shock Metamorphism of Natural Materials (Mono Book Corp., Baltimore, 1968; pp 19-29. (Introductory article.)
- Faccioli, E.
Ang, A.H.-S. "A Discrete Eulerian Model of Spherically Symmetric Compressible Media," J.Comput.Phys. 3:226-258 (1968).
- Herrmann, W. "Basic Response Phenomenology and Analytical Techniques," Sandia Labs. SC-R-68-1784, 46pp, Aug 1968. (Introductory; reprinted from Proceedings of the X-Ray Effects Conference, Vol. 1, Material Response, July 11-13, 1967 at Battelle Memorial Institute, Columbus, Ohio.)
- Boley, B.A.
Hetnarski, R.B. "Propagation of Discontinuities in Closed Thermoelastic Problems," J.Appl.Mech. 35:489-494 (1968).
- Gilman, J.J. "Dislocation Dynamics and the Response of Materials to Impact," Appl.Mech.Revs. 21:767-783 (1968). (Review article; 80 refs.)

B. Theory (cont'd; 1969)

- Chou, S.C.
et al "Stress-Wave Propagation in a Class of Nonhomogeneous Elastic Media," AIAA J. 7:1710-6 (1969). -Army NMRC-
- Costantino, C.J. "Two Dimensional Wave Propagation Through Nonlinear Media," J.Comput.Phys. 4:147-170 (1969). -CCHY-
- Duvall, G.E.
et al "Steady Shock Profile in a One-Dimensional Lattice," J.Appl.Phys. 40:3771-5 (1969). -Wash.St.U.-
- Horis, Y. "Numerical Integration of Plane Elastic-Relaxing Plastic Shock Waves by a Two-Step Method," J.Appl.Phys. 40:5368-73 (1969). -NCSU-
- Manvi, R.
Duvall, G.E.
Lowell, S.C. "Finite Amplitude Longitudinal Waves in Lattices," Int.J.Mech.Sci. 11:1-8 (1969). -Wash.St.U.-
(Semi-infinite chain of mass points with linear and non-linear nearest neighbor interaction.)
- Miklowitz, J.(ed.) Wave Propagation in Solids (Am.Soc.Mech.Engrs., N.Y., 1969), 183pp, presented at ASME Winter Annual Mtg., L.A., Nov 1969.
L. Knopoff, "Elastic Wave Propagation in a Wedge,"
J. Miklowitz, "Analysis of Elastic Waveguides Involving an Edge,"
R.A. Scott, "Transient Anisotropic Waves in Bounded Elastic Media,"
E.Varley,et al, "Modulated Simple Waves: An Approach to Attenuated Finite Amplitude Waves,"
E.H. Lee, "Some Recently Developed Aspects of Plastic Wave Analysis," -Stanford U.-
W. Hermann, "Nonlinear Stress Waves in Metals".
- Morland, L.W.
Cox, A.D. "Existence and Uniqueness of Solutions to Uni-Axial Elastic-Plastic Wave Interaction," Phil.Trans.Roy.Soc.London A264(1154):497-556 (1969).
- Naghdi, P.M.
Balaban, M.M.
Green, A.E. "Acceleration Waves in Elastic-Plastic Materials," U. Calif. Berkeley, AD695960, 44pp, 1969.

B. Theory (cont'd; 1969)

- Rausch, P.J. "The Effect of Heating Time on Thermally Induced Stress Waves," J.Appl.Mech. 36:240-2 (1969). -Aerospace-
- Rausch, P.J. "Shock Propagation in a Strain-Hardening Material," J.Appl.Mech. 36:181-8 (1969).
(Response to nonuniform, instantaneous internal heating.)
- Schwartz, M. "Graphical Representation of Plane Elastic Wave Propagation in Flat Plates," J.Appl.Phys. 40:4503-6 (1969). -Frankford Arsenal-
- Waterston, R.J. "One-Dimensional Shock Waves and Acceleration Fronts in Non-Linear Viscoelastic Materials," Quart.J.Mech.Appl.Math. XXII:261-281 (1969).
- Lee, E.H. "Elastic-Plastic Deformation at Finite Strain," J.Appl.Mech. 36:1-6 (1969). -Stanford U.-

B. Theory (cont'd; 1970)

- Burniston, E.E.
Chang, T.S. "Some One-Dimensional Solutions of Nonlinear Waves of a Rate-Sensitive, Elastoplastic Material," North Carolina State U., Raleigh, TR-70-1, AD699921, 40pp, Jan 1970.
- Danyluk, H.T.
et al "A Note on Elastic-Plastic Flow," Quart.Appl.Math., Oct 1970, pp 454-7. -U.Alberta- ("The plane plastic flow of an incompressible elastic perfectly-plastic solid that obeys the Mises yield condition and a properly invariant form of the Prandtl-Reuss equations is considered.")
- Fowles, R.
Williams, F.F. "Plane Stress Wave Propagation in Solids," J.Appl.Phys. 41:360-3 (1970). -Wash.St.U.- (Theoretical.)
- Fowles, R. "Conservation Relations for Spherical and Cylindrical Stress Waves," J.Appl.Phys. 41:2740-1 (1970). -Physics Int'l-
- Gillis, P.F.
Kelly, J.M. "Thermal Effects in Shocks in Viscoplastic Solids," J.Mech.Phys.Solids 18:397-412 (1970). -U.Kent.-
- Habberstad, J.L. "Axisymmetric Elastic Wave Propagation in Bars Containing a Discontinuity," Wash.St.U. WSU-SDL-70-C4, AD716547, 215pp, Sep 1970.
- Pastine, D.J.
O'Keefe, D.J. "Theoretical Estimates of Elastic Relief Wave Velocities for Metals with Applications to Al and Cu," J.Appl.Phys. 41:2743 (1970). -NOL-
- Huang, Y.K. "Some Problems of Non-Linear Stress Waves in Solids," Watervliet Arsenal WVT-7039, AD712991, 16pp, Jul 1970. (Dynamic loading by explosive or impact.)
- Godunov, S.K.
Deribas, L.A.
Zabrodin, A.V.
Kozin, N.S. "Hydrodynamic Effects in Colliding Solids," J.Comput.Phys. 5:517-539 (1970).
- Bertholf, L.P.
Oliver, M.L. "Approximate Analytic Expression for the Attenuation of a Triangular Pressure Pulse with Distance," Sandia Labs. SC-RR-69-596, 50pp, Feb 1970. (Numerical results are given for aluminum.)

B. Theory (cont'd; 1970)

- Kinslow, R.(ed.) High-Velocity Impact Phenomena (Academic Press, N.Y., 1970).
 A.J. Cable, "Hypervelocity Accelerators," -AEDC-
 N.L. Hickerson, "Stress Wave Propagation in Solids,"
 J.K. Dienes & J.M. Walsh, "Theory of Impact: Some General Principles and the Method of Eulerian Codes," -Gulf GA-
 J.W. Gehring, Jr., "Theory of Impact in Thin Targets and Shields and Correlation with Experiment,"
 T.D. Riney, "Numerical Evaluation of Hypervelocity Impact Phenomena,"
 W.J. Rae, "Analytical Studies of Impact-Generated Shock Propagation: Survey and New Results," -CAL-
 R.G. McQueen, et al, "The Equation of State of Solids from Shock Wave Studies," -IASL-
 R.B. Pond & C.M. Glass, "Metallurgical Observations and Energy Partitioning,"
 J.W. Gehring, Jr., "Engineering Considerations in Hypervelocity Impact".
- Nakano, T. "Numerical Computation of the Shock Wave Diffracted by a Circular Cylindrical Cavity in Elastic-Plastic Media," Cold Regions Res. & Engg. Lab. CRREL-RR-279, AD702906, 27pp, Jan 1970.
- Lepik, Ü. "On the Propagation of Plane Shock Waves in a Thick Plate," Arch.Mech.Stosowane; 22(5):571-583 (1970).
 (Pressure pulse of about 100 kbar is applied to one surface of an infinite plate; several approximate solutions are carried out.)

B. Theory (cont'd; 1971)

- Ahrens, T.J. "The Use of Shock Waves in the Vaporization of Metals,"
Urtiew, P.A. Lawrence Livermore Lab. UCRL-51109, 46pp, Aug 1971
- Chen, P.J. "One Dimensional Shock Waves in Elastic Non-Conductors,"
Arch.Rat.Mech.Anal. 17:350-362 (1971).
- Chen, P.J. "The Growth of One-Dimensional Shock Waves in Elastic
Gurtin, M.E. Nonconductors," Int.J.Solids Structures 7:5-10 (1971).
- Edwards, D.J. "Acceleration of Aluminum Foils by Shocks in FMA,"
Erkman, J.O. Naval Ordnance Lab. NOLTR 70-266, 24pp, Mar 1971.
(WCNDY calculations and graphical solutions.)
- Horie, Y. "Adiabatic Theory of Plane Steady Shock Profiles in
Solids," J.Appl.Phys. 42:2925-33 (1971).
- Huang, Y.K. "Interrelationship Between Acoustic and Shock-Wave
Properties of Solids," J.Appl.Phys. 42:4084-5 (1971).
- Mehta, P.K. "Comment on 'A Direct Numerical Analysis Method for
Davids, N. Cylindrical and Spherical Blast Waves',"
Patal, N.T. AIAA J. 9:1887-8 (1971).
(Corrections to previous article, AIAA J. 4:112 (1966).)
- Raniecki, B. "The Influence of Dynamical Thermal Expansion on the
Propagation of Plane Elastic-Plastic Stress Waves,"
Quart.Appl.Math. July 1971, 277-290.
- Sedov, A. "Visco-Elastic Waves by the Use of Wave-Front Theory,"
Mariboli, G.A. Int.J.Non-Linear Mech. 6:615-624 (1971).
(Weak shock structures; rate-type viscoelastic materials.)
- Thomsen, L. "Elastic Shear Moduli and Crystal Stability at High
P and T," J.Geophys.Res. 76:1342-5 (1971).
("...new theoretical expressions for the elastic
velocities of a cubic or isotropic homogeneous solid)
as functions of density and temperature...")
- Ting, T.C.T. "On the Initial Speed of Elastic-Plastic Boundaries in
Longitudinal Wave Propagation in a Rod,"
J.Appl.Mech. 38:441-7 (1971).
- Whitesides, J.L. "Viscous Effects on Hypervelocity Impact,"
Yuan, S.W. J.Appl.Phys. 42:4156-9 (1971).
(Analytic solution; spherical projectile & target.)
- Zarembo, L.K. "Nonlinear Phenomena in the Propagation of Elastic Waves
Krasil'nikov, V.A. in Solids," Soviet Physics-Uspokhi 13:778-797 (1971).

B. Theory (cont'd; 1971)

- Henneke, E.G.II "Reflection-Refracton of a Stress Wave at a Plane Boundary Between Anisotropic Media," J.Acoust.Soc.Am. 51:210-7 (1971). -Fla.St.U.-
- Yang, J.C.S. "Elastic-Plastic Wave Cancellation in Energy-Absorbing Materials," AIAA J. 9:2451-2 (1971). -NOL-
(Mitigation by overtaking of plastic wave by elastic waves.)
- Walton, O.R. "A Wave Propagation Model for Impulse Prediction," Lawrence Radiation Lab. UCRL-51102, 17pp, Jul 1971.
(Melt-dominated blowoff impulse; acoustic wave model.)
- Caldirola, P.
Knoepfel, H.
(eds.) Physics of High Energy Density (Academic Press, N.Y., 1971).
Proc. Intern. School of Physics, "Enrico Fermi", Course XLVIII. Includes:
G.E. Duvall "Shock Waves in Condensed Media"
R.N. Keeler & E.B. Royce, "Shock Waves in Condensed Media: Experimental Techniques", "High-Pressure Equations of State from Shock-Wave Data", etc.

B. Theory (cont'd; 1972)

- Paskin, A.
Dienes, G.J. "Molecular Dynamic Simulations of Shock Waves in a Three-Dimensional Solid," J.Appl.Phys. 43:1605-10 (1972). (Lennard-Jones potential.)
- Johnson, J.N. "Calculation of Plane-Wave Propagation in Anisotropic Elastic-Plastic Solids," J.Appl.Phys. 43:2074-82 (1972).
- Chang, H.L.
Horie, Y. "Analysis of Plane Shock Structures in 606-T6 Aluminum," J.Appl.Phys. 43:3362-6 (1972).
- Tasi, J. "Perturbation Solution for Growth of Nonlinear Shock Waves in a Lattice," J.Appl.Phys. 43:4016-21 (1972). (One-dimensional lattice with velocity step applied to the first mass.)
- Nayfeh, A.H.
Nemat-Nasser, S. "Elastic Waves in Inhomogeneous Elastic Media," J.Appl.Mech. 39:696-702 (1972). (WKB solution.)

1. Shock Velocity vs. Particle Velocity

- Pastine, D.J.
Piacesi, D. "The Existence and Implications of Curvature in the Relation Between Shock and Particle Velocities for Metals,"
J.Phys.Chem.Solids 27:1783-92 (1966). NOL-
- Ruoff, A.L. "Linear Shock-Velocity-Particle-Velocity Relationship,"
J.Appl.Phys. 38:4976-80 (1967). -Cornell U.-
(Theoretical reason for the linear relationship.)
- Pastine, D.J. "Interpolation Formula for the Relationship Between Shock Velocity, u_s , and Particle Velocity, u_p , in Solids,"
J.Appl.Phys. 40:440-1 (1969). -NOL-
- Urtiew, P.A. "Reflected Shock-Velocity-Particle Velocity Relationship in Solids," J.Appl.Phys. 40:3962-7 (1969). -LRL-
- O'Keefe, D.J. "Effects of High Pressure on the Thermal Expansion of Solids with a Linear U_s - u_p Relationship,"
J.Appl.Phys. 41:5101-2 (1970). -NOL-
- Prieto, F.E.
Renero, C. "Equation for the Shock Adiabats,"
J.Appl.Phys. 41:3876-83 (1970). -U.Nac.Mexico-
(Discusses the quadratic U_s - u_p relation.)
- Prieto, F.E.
Renero, C. "Reduced Hugoniot," J.Appl.Phys. 42:296-300 (1971).
(A quadratic fit to U_s vs u_p is used and complex pressure and complex compression are introduced.)
- Huang, Y.K. "Shock-Wave Behavior and Properties of Solids,"
J.Appl.Phys. 42:3212-15 (1971).
(Quadratic U_s - u_p relation is used.)
- Swan, G.W. "A Theory for the Slope of the Shock-Wave Velocity Against Particle Velocity Curve,"
J.Phys.D:Appl.Phys. 4:1077-82 (1971). -Wash.St.U.-

2. Similarity Solutions

- | | |
|--|--|
| Hunter, S.C.
Crozier, R.J.M. | "Similarity Solution for the Rapid Uniform Expansion of a Spherical Cavity in a Compressible Elastic-Plastic Solid," Quart.J.Appl.Math. <u>XXI</u> (4):467-486 (1968). |
| Zabaoakhin, E.I. | "Shock Waves in Layered Systems," Soviet Physics-JETP <u>22</u> :446-8 (1968).
(Periodic self-similarity.) |
| Taulbee, D.B.
Cozzarelli, F.A.
Dym, C.L. | "Similarity Solutions to Some Nonlinear Impact Problems," Int.J.Non-Linear Mech. <u>6</u> :27-43 (1971). |

For background on similarity solutions, see:

- | | |
|-------------|---|
| Sedov, L.I. | <u>Similarity and Dimensional Methods in Mechanics</u>
(Academic Press, N.Y., 1959). |
|-------------|---|

C. Computer Codes

A basic background in finite difference methods is given in:

R.D. Richtmyer & K.W. Morton, Difference Methods for Initial-Value Problems, Second Edition (Wiley, N.Y., 1967) 405pp.

A useful basic one- or two-space dimension Lagrangian finite-difference computer program can be readily written from the equations given by Wilkins (p. 24). To such a basic program one can add features needed for particular problems. Some typical features are:

- 1) Automatic initial zoning to save labor when the problem is being set up.
- 2) Automatic rezoning to allow most of the computational effort to be concentrated in the region of interest.
- 3) Slips lines (for 2-D flow) along which materials can slide along each other.
- 4) Capability for creating internal voids (spalls) in accordance with criteria based on tensile stress and strain rate.
- 5) Equations of state can require considerable experimental and theoretical effort. Phase changes, melting, vaporization, and work-hardening, for example, can be important. Part III of this report lists some sources of theoretical and experimental information on equations of state.

1. PUFF

Barrett, W.H.

"An Investigation of a Mixed-Phase Equation of State for the PUFF 66 Computer Code," AFIT Master's Thesis, GNE/PH/71-1, 118pp, AD726992, Jun 1971.

2. WONDY

- | | |
|--|--|
| Herrmann, W.
Holzhauser, P.
Thompson, R.J. | "WONDY - A Computer Program for Calculating Problems of Motion in One Dimension,"
Sandia Corp. SC-RR-66-601, 140pp, Feb 1967. |
| Herrmann, W.
Lawrence, R.J.
Mason, D.S. | "Strain Hardening and Strain Rate in One-Dimensional Wave Propagation Calculations,"
Sandia Labs. SC-RR-70-471, 115pp, Nov 1970.
(A subroutine for WONDY is included.) |
| Butcher, B.M. | "Numerical Techniques for One-Dimensional Rate-Dependent Porous Material Compaction Calculations,"
Sandia Labs. SC-RR-710112, 61pp, Apr 1971.
(Subroutine for WONDY code.) |
| Bakken, L.H.
Anderson, P.D. | "An Equation-of-State Handbook (Conversion Relations Between the WONDY/TOODY and the PUFF/KJ/HEMP Classes of Shock Wave Propagation Computer Codes,"
Sandia Labs. SCL-DR-68-123, 54pp, Jan 1969.
(Includes tables of data for 40 materials.) |
| Erkman, J.O.
Edwards, D.J. | "Computer Code for Calculating One-Dimensional Flow,"
Naval Ordnance Laboratory NOLTR 68-160, AD681377, 11pp, Nov 1968. (Reports acquisition of WONDY code.) |

3. TOODY

- | | |
|--|--|
| Thorne, B.J.
Herrmann, W. | "TOODY - A Computer Program for Calculating Problems of Motion in Two Dimensions,"
Sandia Labs. SC-RR-66-602, 166pp, Jul 1967. |
| Bertholf, L.D.
Benzley, S.E. | "TOODY II - A Computer Program for Two-Dimensional Wave Propagation," Sandia Labs. SC-RR-68-41, 262pp, Nov 1968. |
| Benzley, S.E.
Bertholf, L.D.
Clark, G.E. | "TOODY II-A, A Computer Program for Two Dimensional Wave Propagation," Sandia Labs. SC-DR-69-516, 153pp, Nov 1969.
(CDC 6600 FORTRAN version.) |
| Bertholf, L.D.
Karnes, C.H. | "Axisymmetric Elastic-Plastic Wave Propagation in 6061-T6 Aluminum Bars of Finite Length,"
J.Appl.Mech. 36:533-541 (1969). -Sandia-
(End-on impact of two identical aluminum bars is studied experimentally and calculated with the TOODY code.) |

4. KO and HEMP

- | | |
|---------------|--|
| Wilkins, M.L. | "Calculation of Elastic-Plastic Flow," in B.Alder et al (eds.), <u>Methods in Computational Physics, Volume 3, Fundamental Methods in Hydrodynamics</u>
(Academic Press, N.Y., 1964) pp 211-263.
(A 1-D code and the 2-D HEMP code are described.) |
| Wilkins, M.L. | "Calculation of Elastic-Plastic Flow,"
Lawrence Radiation Lab. UCRL-7322, Rev. 1, 97pp, Jan 1969. |
| Wilkins, M.L. | "Finite Difference Scheme for Calculating Problems in Two Space Dimensions and Time,"
J.Comput.Phys. 5:406-414 (1970). -LRL- |
| Giroux, E.D. | "HEMP User's Manual,"
Lawrence Livermore Lab. UCRL-51079, 204pp, Jun 1971. |

5. ELK

- Christensen, D. "ELK 40: Prediction Calculations of Ground Motion for Distant Plain, Event 6," Physics International Co., DASA-2471, AD707802, 89pp, Dec 1969.
(ELK code calculations of cratering from 100-ton TNT sphere tangent to ground surface.)
- Maxwell, D.E.
Moises, H. "Hypervelocity Impact Cratering Calculations," Physics International Co., NASA-CR-115350, N72-16248, 213pp, Jan 1971. (ELK calcs., basalt, soil.)

6. SOC

- Butkovich, T.R. "Calculation of the Shock Wave from an Underground Nuclear Explosion in Granite,"
J.Geophys.Res. 70:885-892 (1965). -LRL-
(New SOC computer code is used.)
- Holzer, F. "Measurements and Calculations of Peak Shock-Wave Parameters from Underground Nuclear Detonations,"
J.Geophys.Res. 70:893-905 (1965). -LRL-
(Results from several explosions are given.
The calculations use the SOC code.)

7. TENSOR

- Maerchen, G.
Sack, S. "The TENSOR Code," in B.Alder et al (eds.), Methods in Computational Physics, Vol. 3, Fundamental Methods in Hydrodynamics (Academic Press, N.Y., 1964) pp 181-210.
(Computer program for 2-D elastic-plastic flow.)

8. MCDIT

Burns, B.P.

"MCDIT 1. A Computer Code for One-Dimensional Impact Problems," Drexel Inst. Tech. Report No. 125-11, AD665815, 36pp, Dec 1967. (Method of characteristics).

Shen, S.
Chou, P.C.

"A Method of Characteristics Code for Energy Deposition Calculations (MCDIT 3)," Drexel U., Drexel-125-15, BRL-CR-36, AD724734, 97pp, Mar 1971.

9. HELP

Hageman, L.J.
Walsh, J.M.

"HELP, A Multi-Material Eulerian Program for Compressible Fluid and Elastic-Plastic Flows in Two Space Dimensions and Time, Volume I," Systems Science & Software 3SR-350-Vol. 1, BRL-CR-39-Vol. 1, AD726459, 145pp, May 1971.

Hageman, L.J.
Walsh, J.M.

"...Volume II. FORTRAN Listing of HELP," Systems Science & Software 3SR-350-Vol. 2, BRL-CR-39-Vol. 2, AD726460, 122pp, May 1971.

Hageman, L.J.
Walsh, J.M.

"HELP Code Solutions to Two Test Problems in Armor Penetration," Systems Science & Software 3SR-201, BRL-CR-37, AD725998, 165pp, May 1971.

10. Electron deposition (for initial-condition calculations for impulsive electron-beam loading of solids)

Berger, M.J.

"Monte Carlo Calculation of the Penetration and Diffusion of Fast Charged Particles," in B.Alder, et al (eds.), Methods in Computational Physics, Vol. 1, Statistical Physics (Academic Press, N.Y., 1963) pp 135-215. (Basis of the ZEBRA code.)

Buxton, L.D.

"The Electron Transport Computer Code ZEBRA 1," Harry Diamond Labs. HDL-TR-1536, 21pp, Jun 1971.

11. Various codes

- | | |
|--|--|
| Herrmann, W.
Jones, A.H.
Percy, J.H. | "The Inclusion of Material Strength in Hydrodynamic Calculations," MIT, AFSWC-TDR-63-12, AD410386, 91pp, Apr 1963. |
| Herrmann, W. | "A Lagrangian Finite Difference Method for Two-Dimensional Motion Including Material Strength," AFWL-TR-64-107, AD609523, 107pp, Nov 1964. |
| Mader, C.L. | "One-Dimensional Elastic-Plastic Calculations for Aluminum," Los Alamos Sci. Lab. LA-3678, Feb 1967. |
| Mader, C.L.
Gage, W.R. | "FORTRAN SIN - A One-Dimensional Hydrodynamic Code for Problems Which Include Chemical Reactions, Elastic-Plastic Flow, Spalling, and Phase Transitions," Los Alamos Sci.Lab. LA-3720, May 1967. |
| Petschek, A.G.
Hanson, M.E. | "Difference Equations for Two-Dimensional Plastic Flow," J.Comput.Phys. 3:307-321 (1968). (TEMS code.) |
| Johnson, J.N.
Eand, W. | "Investigation of Precursor Decay in Iron by the Artificial Viscosity Method," J.Appl.Phys. 38:1578-85 (1967). -WSU- |
| Barker, L.M. | "SWAP-9: An Improved Stress Wave Analyzing Program," Sandia Labs. SC-RR-69-233, 181pp, Aug 1969. (Uses method of characteristics.) |
| Barr, G.W.
Young, E.G. | "MAT2D: A Plane-Stress Material Model for an Elastic-Plastic Anisotropic Strain-Hardening Material," Sandia Labs. SC-RR-69-656, 74pp, Jan 1970. (Model consists of elastic-perfectly plastic elements arranged in parallel.) |
| Butcher, B.M. | "A Computer Program, SRATE, for the Study of Strain-Rate Sensitive Stress Wave Propagation. Part I," Sandia Corp. SC-RR-65-208, 54pp, Sep 1966. (Method of characteristics.) |
| Erikman, J.O. | "Explosively Induced Nonuniform Oblique Shocks," Phys.Fluids 1:535-540 (1958). (Method of characteristics for Al and Cu.) |
| Holzer, F. | "Calculation of Seismic Source Mechanisms," Proc.Roy.Soc. A290:408-429 (1966). (One-dimensional computer code calculations of underground nuclear detonations.) |

11. Various codes (cont'd)

- Riney, T.D. "Theoretical Hypervelocity Impact Calculations Using the FICWICK Code," GE Space Sci. Lab. R64SD13, Reprint No. 245, 73pp, Feb 1964.
- Dienes, J.K. "The Theory of Hypervelocity Impact," General Dynamics, San Diego, GA-6509, Annual Status Report, AD617540, 124pp, Jun 1965.
(Mainly on code development.)
- Cannon, E.T. "Theoretical and Experimental Study of Low-Velocity Penetration Phenomena," Utah Res. & Dev. Co. (for ARFA), AD646457, 152pp, Aug 1966.
(PIF code with no grid.)
- Kreyenhagen, K.N.
Wagner, M.H.
Piechocki, J.J.
Bjork, R.L. "Ballistic Limit Determination in Impacts on Multi-material Laminated Targets," AIAA J. 8:2147-51 (1970).
(Two-dimensional elastic-plastic calculations with the SHAFÉ code.) -SHI-
- Rosenblatt, M. "Numerical Calculations of Hypervelocity Impact Crater Formation in Hard and Soft Aluminum Alloys," Shock Hydrodynamics, Inc., AFML-TR-70-254, AD721468, Feb 1971.
(Eulerian 2-D STEEP code calculations for 4 and 7 km/sec Al spheres onto 1100-O and 7075-T6 Al alloys.)

11. Various codes (cont'd)

- Rosenblatt, M.
Piechocki, J.J. "Cratering and Surface Waves Caused by Detonation of a Small Explosive in Aluminum," Shock Hydrodynamics, Inc. SH-6135-MC, DASA-2495, AD708734, 78pp, Apr 1970. (SHEP calculations.)
- Costantino, C.J. "Stress Waves in Layered Arbitrary Media. SLAM Code Free-Field Study, Vol. I," IIT Res.Inst., SAMSO-TR-68-181-Vol. I, AD840134, 211pp, Jul 1968.
"... Vol. I, Appendix," AD840135, 424pp, Jul 1968.
"... Vol. II. Computer Program Description of Nonlinear SLAM Code," AD840136, 419pp, Jul 1968.
- Wachowski, A. "... Vol. III. SLAM Code (Version 3) and VIS4 Modifications," AD840137, 233pp, Jul 1968.
(Response of buried structures to nuclear attack.)
- Golland, R.W.
Reingold, E.M.
Robinson, R.R.
Wachowski, A. "... Vol. IV. Auxiliary Programs," AD840138, 273pp, Jul 1968.
- Ang, A.H.-S.
Rainer, J.H. "Digital Calculation of Axisymmetric Elastic-Plastic Ground Motions from Nuclear Bursts, J. Illinois, AFWL-TR-65-115, AD475498, 226pp, Nov 1965.
- Samah, A.H. "A Discrete-Variable Approach for Elastic-Plastic Wave Motions in Layered Solids," J.Comput.Phys. 8:343-368 (1971). -J.III.

11. Various codes (cont'd)

- Garg, S.K. "Wave Propagation Effects in a Fluid-Saturated Porous Solid," J.Geophys.Res. 76:7947-62 (1971). -SSS- (TINC code is used; finite difference equations are given.)
- Dienes, J.K. "An Eulerian Method for Calculating Strength Dependent Deformation. Part One. A Derivation for the Flow Equations for Strength Dependent Deformation," Gulf General Atomic GAMD-8497 Pt One, AD678565, 16pp, Feb 1968.
- Walsh, J.M.
Evans, M.W.
Dienes, J.K. "... Part Two. Description of the Finite Difference Equations," Gulf General Atomic GAMD-8497 Pt 2, AD678566, 31pp, Feb 1968.
- Dienes, J.K.
Evans, M.W.
Hageman, L. "... Part Three. The FORTRAN IV Program and Instructions for Its Use," Gulf General Atomic GAMD-8497 Pt 3, AD678567, 169pp, Feb 1968.
- Dienes, J.K.
Hageman, L. "... Addendum to Report on the OIL-RPM Computer Code," Gulf General Atomic GAMD-8497 Add., AD678568, 29pp, Feb 1968.
- Thorne, B.J.
Dahlgren, D.A. "A Comparison of Numerical Techniques for Wave Propagation Problems in Solids," Sandia Labs. SC-RU-70-571, 211pp, Nov 1971. (The Lax-Wendroff 2-step method, the Richtmyer-von Neumann, the Godunov, and the Walsh implicit methods are compared on seven 1-D test problems.)
- Riney, T.D. "Behavior of Metals During Hyper Velocity Impact Cratering," in S. Ostrach and R.E. Scanlan, Developments in Mechanics, Volume 2, Part 2, Solid Mechanics, Proc. Eighth Midwestern Mechanics Conference, Case Inst.Tech., Apr, 1963 (Pergamon, N.Y., 1965) pp 419-445. (PICWICK code; based on PIC.)
- Rosenblatt, M.
Kreyenhagen, K. "Analytical Study of Debris Clouds Formed by Hypervelocity Impacts on Thin Plates," Shock Hydrodynamics, Inc., AFML-TR-68-266, 146pp, AD683055, Dec 1968. (2-D Eulerian STEEP code; spherical projectiles.)
- Walsh, J.M.
et al "Summary Report on the Theory of Hypervelocity Impact," General Atomic GA-5119, AD436231, 66pp, Mar 1964. (Continuous Eulerian code is used.)

D. Special Configurations and Effects

1. Bars

- Chree, C. "The Equations of an Isotropic Elastic Solid in Polar and Cylindrical Co-ordinates, their Solution and Application," Trans.Camb.Phil.Soc. XIV:250-369 (1883).
- Hopkinson, B. "A Method of Measuring the Pressure Produced in the Detonation of High Explosives or by the Impact of Bullets," Phil.Trans.Roy.Soc. A213:437-456 (1914). (Introduction of the Hopkinson pressure bar.)
- Landon, J.W.
Quinney, H. "Experiments with the Hopkinson Pressure Bar," Proc.Roy.Soc. 103:622-643 (1923).
- Donnell, L.H. "Longitudinal Wave Transmission and Impact," Trans.Am. Soc.Engrs. 52:153-167 (1930). (Theory) -U.Mich.-
- Bancroft, D. "The Velocity of Longitudinal Waves in Cylindrical Bars," Phys.Rev. 59:588-593 (1941). (Theory.)
- DeJuhasz, K.J. "Graphical Analysis of Impact of Elastic Bars," J.Appl.Mech. 9:A122-8 (1942).
- Taylor, G.I. "The Plastic Wave in a Wire Extended by an Impact Load," British Official Report RC329, 1942. Reproduced in: G.K. Batchelor (ed.), The Scientific Papers of Sir G.I. Taylor, Vol. 1 (Cambridge U. Press, 1958) pp 467-479.
- Pipes, L.A. "The Operational Theory of Longitudinal Impact," J.Appl.Phys. 13:503-511 (1942).
- Hudson, G.E. "Dispersion of Elastic Waves in Solid Circular Cylinders," Phys.Rev. 63:46-51 (1943). -Brown U.-
- Bruckner, R.E. "Graphical Analysis of Impact of Elastic Bars," J.Appl.Mech. 10:A-111-114 (1943).
- Fehr, R.O.
Parker, E.R.
DeMicheal, D.J. "Measurement of Dynamic Stress and Strain in Tensile Test Specimens," J.Appl.Mech. 11:A65-A71 (1944).
- Duwez, P.E.
Clark, D.S. "An Experimental Study of the Propagation of Plastic Deformation Under Conditions of Longitudinal Impact," Proc.Am.Soc.Testing Mtrls. 47:502-532 (1947).
- White, M.P.
Griffis, L. "The Permanent Strain in a Uniform Bar Due to Longitudinal Impact," J.Appl.Mech. 14:A337-A343 (1947).
- Davies, E.M. "A Critical Study of the Hopkinson Pressure Bar," Phil.Trans.Roy.Soc. A240:375-457 (1948). -U.Camb.- (Experiment and theory.)

1. Bars (cont'd)

- DeJuhasz, K.J. "Graphical Analysis of Impact of Bars Stressed Above the Elastic Range," J.Franklin Inst. 248:15-48 & 113-142 (1949).
- Hughes, D.S. "Transmission of Elastic Pulses in Metal Rods," Phys.Rev. 75:1552-6 (1949). -U.Texas-
Pondrom, W.L. (Transmission time measurements; steel, aluminum, brass,
Mims, R.L. lucite. Single input pulse gives several pulses at the other end of the rod.)
- Karman, T.von "The Propagation of Plastic Deformation in Solids," J.Appl.Phys. 21:987-994 (1950).
Duzes, P. (Longitudinal impact at end of cylindrical bar.)
- Malvern, L.E. "Plastic Wave Propagation in a Bar of Material Exhibiting a Strain Rate Effect," Quart.Appl.Math. 8:405-411 (1951).
- Malvern, L.E. "The Propagation of Longitudinal Waves of Plastic Deformation in a Bar of Material Exhibiting a Strain-Rate Effect," J.Appl.Mech. 18:203-8 (1951).
- Campbell, J.D. "An Investigation of the Plastic Behaviour of Metal Rods Subjected to Longitudinal Impact," J.Mech.Phys.Solids 1:113-123 (1953).
- Rubin, R.J. "Propagation of Longitudinal Deformation Waves in a Pre-stressed Rod of Material Exhibiting a Strain-Rate Effect," J.Appl.Phys. 25:528-536 (1954).
- Kolsky, H. "The Propagation of Longitudinal Elastic Waves Along Cylindrical Bars," Phil.Mag. 45:712-726 (1954).
(Theory and experiments.)
- Curtis, C.W. "Second Mode Vibrations of the Pochhammer-Three Frequency Equation," J.Appl.Phys. 25:928 (1954).
(Experiments with step pressure on bar end.)
- Tu, L.Y. "Dispersion of Ultrasonic Pulse Velocity in Cylindrical Rods," J.Acoust.Soc.Am. 27:550-5 (1955).
Brennan, J.N. (Experiments.)
Sauer, J.A.
- Davies, R.M. "Stress Waves in Solids," Brit.J.Appl.Phys. 7:203-9 (1956).
(Mostly on Hopkinson's pressure bar.)
- Miklowitz, J. "The Propagation of Compressional Waves in a Dispersive Elastic Rod. Part I—Results From the Theory," J.Appl.Mech. 24:231-9 (1957). (Mindlin-Herrmann theory.)
- Skalak, R. "Longitudinal Impact of a Semi-Infinite Circular Elastic Bar," J.Appl.Mech. 24:59-64 (1957). -Columbia U.-
(Linear elasticity and double-integral transforms.)

1. Bars (cont'd)

- Miklowitz, J.
Nisewanger, C.R. "The Propagation of Compressional Waves in a Dispersive Elastic Rod. Part II--Experimental Results and Comparison with Theory," J.Appl.Mech. 24:240-4 (1957).
(300 psi step applied to 24S-T Al alloy rod.)
- Folk, R.
Fox, G.
Shook, C.A.
Curtis, C.W. "Elastic Strain Produced by Sudden Application of Pressure to One End of a Cylindrical Bar. I. Theory," J.Acoust.Soc.Am. 30:552-8 (1958). -Lehigh U.-
(Double transform calculation.)
- Fox, G.
Curtis, C.W. "Elastic Strain Produced by Sudden Application of Pressure to One End of a Cylindrical Bar. II. Experimental Observations," J.Acoust.Soc.Am. 30:559-563 (1958).
(Magnesium bar loaded with about 45 psi.)
- Chadwick, P. "On the Propagation of Thermoelastic Disturbances in Thin Plates and Rods," J.Mech.Phys.Solids 10:99-109 (1962).
- Miklowitz, J. "Transient Wave Propagation in Elastic Rods and Plates," J.Geophys.Res. 68:1190-2 (1963). -CIT-
- Kaul, R.K.
McCoy, J.J. "Propagation of Axisymmetric Waves in a Circular Semi-infinite Elastic Rod," J.Acoust.Soc.Am. 36:653-660 (1954).
(Uses Mindlin-McNiven approx. to Pochhammer's theory.)
- Lubliner, J. "A Generalized Theory of Strain-Rate-Dependent Plastic Wave Propagation in Bars," J.Mech.Phys.Solids 12:59-65 (1964).
- Arenz, R.J. "Uniaxial Wave Propagation in Realistic Viscoelastic Materials," J.Appl.Mech. 31:17-21 (1964).
(Rod with step load on end; extension of Schapery collocation inversion method to dynamic cases.)
- Konstantinov, G.G.
Marchenko, L.L.
Shkhinek, K.N. "Wave Propagation in a Finite Elastoplastic Bar with Longitudinal Impact," Combustion, Explosion and Shock Waves 1(4):39-42 (1965).
- Lindholm, U.S.
Doshi, K.D. "Wave Propagation in an Elastic Nonhomogeneous Bar of Finite Length," J.Appl.Mech., Mar 1965, 135-142. -SWRI-
(Continuously varying modulus of elasticity.)
- Clifton, R.J.
Bodner, S.R. "An Analysis of Longitudinal Elastic-Plastic Pulse Propagation," J.Appl.Mech. 33:248-255 (1966).
(Long uniform bar loaded by short pulse at end.)
- Penner, S.S.
Sharma, O.P. "Interaction of Laser Radiation with an Absorbing Semi-Infinite Solid Bar," J.Appl.Phys. 37:2304-8 (1966).

1. Bars (cont'd)

- Payton, R.G. "Elastic Wave Propagation in a Non-Homogeneous Rod," Quart.J.Mech.Appl.Math. XIX:83-91 (1966). -Adelphi U.-
(A pressure step is applied to the end of a rod with propagation speed varying along the rod.)
- Bertholf, L.D. "Numerical Solution for Two-Dimensional Elastic Wave Propagation in Finite Bars," J.Appl.Mech. 34:725-734 (1967).
(Finite-difference solution; end-loaded bar.)
- Reddy, D.P. "Simple Waves and Shock Waves in a Thin Prestressed Elastic Rod," Z.A.M.P. 19:473-485 (1968).
Achenbach, J.D.
- Gilbert, I.H. "Momentum of Longitudinal Elastic Vibrations,"
Mollow, B.R. Am.J.Phys. 36:822-5 (1968). -Brandeis U.-
- Bertholf, L.D. "Axisymmetric Elastic-Plastic Wave Propagation in 6061-T6 Aluminum Bars of Finite Length,"
Karnes, C.H. J.Appl.Mech. 36:533-541 (1969). -Sandia-
(End-on impact of two identical aluminum bars is studied experimentally and calculated with the TOODY code.)
- Kennedy, L.W. "Longitudinal Wave Propagation in a Circular Bar Loaded Suddenly by a Radially Distributed End Stress,"
Jones, O.K. J.Appl.Mech. 36:470-478 (1969). -Sandia-
- Wood, E.R. "Dynamic Plastic Response of Finite Bars,"
Liu, T.H. AIAA J. 7:2158-60 (1969). -Ga.IT-
- Habberstad, J.L. "Axisymmetric Elastic Wave Propagation in Bars Containing a Discontinuity," Wash.St.U. WSU-SDL-70-04, AD716547, 215pp, Sep 1970.
- Broer, L.J.F. "Longitudinal Motion of an Elastic Bar,"
J.Eng.Math. 4:1-7 (1970).
- Ting, T.C.T. "On the Initial Speed of Elastic-Plastic Boundaries in Longitudinal Wave Propagation in a Rod,"
J.Appl.Mech. 38:441-7 (1971).
- Tuschak, P.A. "Determination of the Unloading Boundary in Longitudinal Elastic-Plastic Stress Wave Propagation,"
Schultz, A.B. J.Appl.Mech. 38:888-894 (1971). (Waves in a rod.)

2. Laminated Media

- White, J.S.
Argona, F.A. "Elastic Wave Velocities in Laminated Media,"
J.Acoust.Soc.Am. 27:310-7 (1955).
- Postma, G.W. "Wave Propagation in a Stratified Medium,"
Geophysics XX:780-806 (1955).
(A periodic stack of plates is replaced by a homogeneous material; the elastic moduli of this material are expressed in terms of the properties of the plates.)
- Abramovici, F.
Alterman, Z. "Computations Pertaining to the Problem of Propagation of a Seismic Pulse in a Layered Solids,"
in B.Alder, et al (eds.), Methods in Computational Physics, Volume 4, Applications in Hydrodynamics
(Academic Press, N.Y., 1965) pp 349-379.
- Behrens, E. "Sound Propagation in Lamellar Composite Materials and Averaged Elastic Constants,"
J.Acoust.Soc.Am. 42:378-383 (1967).
- Achenbach, J.D. "Wave Propagation in Lamellar Composite Materials,"
J.Acoust.Soc.Am. 43:1451-2 (1968).
- Sun, C.-T.
Achenbach, J.D.
Herrmann, G. "Continuum Theory for a Laminated Medium,"
J.Appl.Mech. 35:467-475 (1968).
- Achenbach, J.D.
Sun, C.-T.
Herrmann, G. "On the Vibrations of a Laminated Body,"
J.Appl.Mech. 35:689-696 (1968). -NWU-
(Continuum theory for laminated medium.)
- Alterman, Z.
Karat, F.C., Jr. "Propagation of Elastic Waves in Layered Media by Finite Difference Methods,"
Bull.Seismol.Soc.Am. 58:367-398 (1968).
(Applied to buried point source emitting a compression pulse. For waves from earthquakes.)
- Sun, C.-T.
Achenbach, J.D.
Herrmann, G. "Time-Harmonic Waves in a Stratified Medium Propagating in the Direction of the Layering,"
J.Appl.Mech. 35:408-411 (1968). -NWU-
- Whittier, J.S.
Peck, J.C. "Experiments on Dispersive Pulse Propagation in Laminated Composites and Comparison with Theory,"
Aerospace Corp. SAMS0-TR-69-102, 33pp, AD685712, Feb 1969. Published in J.Appl.Mech. 36:485-490 (1969).
(Alternating layers of low and high modulus material.)
- Peck, J.C.
Gurtman, G.A. "Dispersive Pulse Propagation Parallel to the Interfaces of a Laminated Composite,"
J.Appl.Mech. 36:479-484 (1969).

2. Laminated Media (cont'd)

- Jones, J.P. "Pulse Propagation in a Laminated Medium," Aerospace Corp., SAMSO-TR-70-217, 25pp, AD708464, Jun 1970. (Stress wave attenuation in composites composed of alternate layers of two materials.)
- Sve, C. "Thermoeelastic Waves in a Periodically Laminated Medium," Aerospace Corp., SAMSO-TR-70-417, 33pp, AD715895, Oct 1970. (Oblique propagation of time-harmonic waves.)
- Lundergan, C.D.
Drumheller, D.S. "Propagation of Stress Waves in a Laminated Plate Composite," J.Appl.Phys. 42:669-675 (1971). (Gas gun experiments; plates of Epon and steel.)
- Munson, D.E.
Schuler, K.W. "Steady Wave Analysis of Wave Propagation in Laminates and Mechanical Mixtures," J.Composite Materials 5:286-304 (1971).
- Barker, L.M. "A Model for Stress Wave Propagation in Composite Materials," J.Compos.Mtrls. 5:140-163 (1971). (Plate-laminate composites.)
- Lundergan, C.D. "Discussion of the Transmitted Waveforms in a Periodic Laminated Composite," J.Appl.Phys. 42:4148-55 (1971). (Experiments with Epon 828 plus steel laminate and calculations with WONDY III.)
- Spielvogel, L.Q. "Plane Waves in Layered Media," J.Appl.Phys. 42:3667-9 (1971).
- Richards, P.G. "Elastic Wave Solutions in Stratified Media," Geophysics 36:798-809 (1971).
- Anfinsen, L.E. "Optimum Design of Layered Elastic Stress Wave Attenuators," J.Appl.Mech. 34:751-5 (1967). -IITRI-
- Mishra, S.K. "Propagation of Sound Pulses in a Semi-Infinite Stratified Medium," Proc.Indian Acad.Sci. LXX, Section A: 21-48 (1964).
- Zababakhin, E.I. "Shock Waves in Layered Systems," Soviet Physics-JETP 22:446-8 (1966). (Periodic self-similarity.)

3. Composite Media

- Sternberg, J.E.
Chakravorty, J.G. "On the Propagation of Shock Waves in a Nonhomogeneous Elastic Medium," J.Appl.Math. 26:528-536 (1959).
- Hashin, Z. "Theory of Mechanical Behavior of Heterogeneous Media," Appl.Mech.Rev. 17:1-9 (1964). -U.Penn.- (Survey paper.)
- Hashin, Z.
Rosen, B.W. "The Elastic Moduli of Fiber-Reinforced Materials," J.Appl.Mech. 31:223-232 (1964). -U.Penn.-
(Exact results for hexagonal arrays; approximate results for random arrays.)
- Lighthill, M.J. "Contributions to the Theory of Waves in Non-Linear Dispersive Systems," J.Inst.Maths.Applics. 1:269-306 (1965).
- Abbott, B.W.
Broutman, L.J. "Stress-Wave Propagation in Composite Materials," Experimental Mechanics 6(6):383-4 (1966).
(Experiments on longitudinal propagation in filament-reinforced composites.)
- Whitney, J.M.
Riley, M.B. "Elastic Properties of Fiber Reinforced Composite Materials," AIAA J. 4:1537-42 (1966). -AFML-
(Approximate equations are derived for getting the elastic constants from constituent material data.)
- Mulhern, J.F.
Rogers, T.G.
Spencer, A.J.M. "Cyclic Extension of an Elastic Fibre with an Elastic-Plastic Coating," J.Inst.Maths.Applics. 3:21-40 (1967).
- Achenbach, J.D. "Longitudinal Force on an Embedded Filament," Appl.Sci.Res. 19:412-425 (1968). -NWU-
(Dynamic loading.)
- Achenbach, J.D.
Herrmann, G. "Dispersion of Free Harmonic Waves in Fiber-Reinforced Composites," AIAA J. 6:1832-6 (1968). -NWU-
(A set of displacement equations of motion is proposed...)"
- Ben-Amoz, M. "A Continuum Approach to the Theory of Elastic Waves in Heterogeneous Materials," Int.J.Engg.Sci. 6:209-218 (1968).

3. Composite Media (cont'd)

- Chou, P.C. "Introduction to Wave Propagation in Composite Materials," Drexel Inst. Tech., AFML-TR-67-427, 37pp, AD672269, May 1968.
- Sun, C.T. "The Extension of a Superposition Principle to Wave
Valanis, K.C. Propagation in Nonhomogeneous Elastic Media,"
Sierakowski, R.L. J.Composite Materials 2:454-469 (1969).
- Tsou, F.K. "Analytical Study of Hugoniot in Unidirectional Fiber
Chou, P.C. Reinforced Composites,"
J.Composite Materials 2:500-514 (1969).
- Johnson, M.W., Jr. "Analytical Procedures for Predicting the Mechanical
Properties of Fiber Reinforced Composites,"
U.Wis. AFML-TR-65-220, part IV, AD686457, Apr 1969.
- Ting, T.C.T. "Wave-Front Analysis in Composite Materials,"
Lee, E.H. J.Appl.Mech. 36:497-504 (1969).
- Mulhern, J.F. "A Continuum Theory of a Plastic-Elastic Fiber-
et al Reinforced Material,"
Int.J.Engng.Sci. 7:129-152 (1969).
- Haener, J. "Further Investigations Into the Microdynamics of Wave
Puppo, A. Propagation," Whittaker Corp., AFML-TR-68-311-Pt 2,
AD702102, Aug 1969. (Unidirectional fiber reinforced
composites.)
- Webster, L.D. "Wave Propagation in Composite Materials. A Progress
Larrabee, A.D. Report," Kaman Nuclear KN-70-760(R), 48pp, Nov 1970.
- Webster, L.D. "The Method of Finite Elements Applied to Unidirectional
Fiber Reinforced Composites,"
Kaman Nuclear KN-70-59(R), 45pp, Jan 1970.
- Herrmann, G. "Dynamics of Composite Materials," in Recent Advances
in Engineering Science, Volume 5
(Gordon & Breach, N.Y., 1970) pp 183-7.

3. Composite Media (cont'd)

- Bedford, A.
Stern, M. "On Wave Propagation in Fiber-Reinforced Viscoelastic Materials," J.Appl.Mech. 37:1190-2 (1970).
- Haener, J. "Viscoelastic Wave Propagation in Unidirectional Composites," Whittaker Corp., AFML-TR-68-311-Pt 3, AD717760, Sep 1970.
- Hashin, Z. "Complex Moduli of Viscoelastic Composites—I. General Theory and Application to Particulate Composites," Int.J.Solids Structures 6:539-552 (1970).
- Hopkins, A.K. "On the Response of Mixed Materials to One-Dimensional Shock Waves," Dayton U., AFIT Master's Thesis, AFML-TR-70-158, 117pp, AD712062, Jul 1970.
(Experimental study of Cu-polyethylene mixtures; 1-D small-bore powder gun impact at 0.5-2.5 km/sec.)
- Torvik, P.J. "Shock Propagation in a Composite Material," J.Composite Materials 4:296-309 (1970).
Also in AFIT-TR-69-7, AD690504, 25pp, Jun 1969.
(Garg & Kirsch, J.Composite Materials 5:439 (1971) find an error in Torvik's energy equation.)
- Moon, F.C.
Mow, C.C. "Wave Propagation in a Composite Material Containing Dispersed Rigid Spherical Inclusions," Rand Corp. RM-6139-PR, AD718087, 33pp, Dec 1970.
- Tsou, F.K.
Holmes, B.S. "Measurements of Shock Hugoniot in Unidirectional Fiber Reinforced Composites," Drexel Univ., 33pp, AFML-TR-69-152-Part 2, AD716560, Nov 1970.
- Eason, G. "Wave Propagation in Inhomogeneous Elastic Media; Normal Loading of Spherical and Cylindrical Surfaces," Appl.Sci.Res. 21:467-477 (1970). -U.Strathclyde-

3. Composite Media (cont'd)

- Herrmann, G.
Achenbach, J.D. "Wave Propagation in Laminated and Fiber-Reinforced Composites," in Mechanics of Composite Materials, Proceedings of Fifth Symposium on Naval Structural Mechanics, Philadelphia, May 1967 (Pergamon, 1970).
- Yeh, R.H.T. "Variational Bounds of the Elastic Moduli of Two-Phase Materials," J.Appl.Phys. 42:1101-3 (1971).
(Bounds for Young's modulus agree with experiment on WC-Co alloy. Examples show usefulness for fiber-reinforced materials.)
- Greszczuk, L.B. "Interfiber Stresses in Filamentary Composites," AIAA J. 9:1274-80 (1971). (Theory and experiment.)
- Tauchert, T.R.
Moon, F.C. "Propagation of Stress Waves in Fiber-Reinforced Composite Rods," AIAA J. 9:1492-8 (1971).
(Experimental; lead-pellet impact on end of rod.)
- Tauchert, T.R. "Propagation of Stress Waves in Woven-Fabric Composites," J.Composite Materials 5:455-465 (1971). -U.Kent.-
(Experiments.)
- Ben-Amoz, M. "Propagation of Finite-Amplitude Waves in Unidirectionally Reinforced Composites," J.Appl.Phys. 42:5422-9 (1971).
(Theory for waves moving in the direction of the fibers.)
- Huang, W.C. "Plastic Behavior of Some Composite Materials," J.Composite Materials 5:320-338 (1971).
- Bedford, A.
Stern, M. "Toward a Diffusing Continuum Theory of Composite Materials," J.Appl.Mech. 38:8-14 (1971).
- Duvall, G.E.
Taylor, S.H., Jr. "Shock Parameters in a Two Component Mixture," J.Composite Materials 5:130-9 (1971).
(Polyethylene-quartz mixture is worked out.)
- Davis, R.O., Jr. "Composite Hugoniot Synthesis Using the Theory of Mixtures," J.Composite Materials 5: 78-90 (1971).
- Davies, W.E.A. "The Elastic Constants of a Two-Phase Composite Material," J.Phys.D:Appl.Phys. 4:1176-81 (1971).

3. Composite Media (cont'd)

- Garg, S.K.
Kirsch, J.W. "Hugoniot Analysis of Composite Materials,"
J.Composite Materials 5:428-445 (1971). -SSS-
(Uses TINC: theory of interacting continua.)
- Garg, S.K. "Wave Propagation Effects in a Fluid-Saturated Porous
Solid," J.Geophys.Res. 76:7947-62 (1971). -SSS-
(TINC code used; finite-difference eqns. are given.)
- Riney, T.D.
Garg, S.K.
Kirsch, J.W.
et al "Wave Propagation in Porous Geologic Composites,"
Systems Science and Software 3SR-648, DNA-27251,
AD732023, 332pp, Jul 1971.
(TINC model is used for NTS tuff.)
- Johnson, J.N. "Shock Propagation Produced by Planar Impact in
Linearly Elastic Anisotropic Media,"
J.Appl.Phys. 42:5522-30 (1971). -Sandia-
(Dissimilar anisotropic plates, each with arbitrary
crystallographic orientation.)
- Wu, T.M.
Moon, F.C. "Propagation of Elastic Waves in Periodic Fiber
Composite Materials," Princeton U. Report No. TR-27,
AROD-8090:5-E, AD731833, 196pp, May 1971.
(Galerkin method and micromechanics method; waves normal
to filaments; dispersion curves confirmed experimentally.)
- Pao, Y.-H. "Some Recent Developments in Elastic Waves in Solids,"
Exp.Mech. 12:83-89 (1972). -Cornell U.-
(Fiber-reinforced composites; thermoelastic waves;
magnetoelastic waves.)
- Anderholm, N.C.
Boade, R.R. "Laser-Induced Stress Waves in Quartz Phenolic,"
J.Appl.Phys. 43:434-6 (1972). -Sandia-
(Grüneisen parameter of 0.22 found for 2-) phenolic.)
- Anderson, G.L. "Wave Propagation and Vibrations in Fiber-Reinforced
Composites," Watervliet Arsenal WVT-7133, AD734295, 81pp,
Jun 1971. (Unidirectional fibers treated as Euler-
Bernoulli beams.)
- Holmes, B.S.
Tsou, F.K. "Steady Shock Waves in Composite Materials,"
J.Appl.Phys. 43:957-961 (1972).
(Flyer plate impact on Epoxy matrix with unidirectional
Al fibers.)
- Morland, L.W. "A Simple Constitutive Theory for a Fluid-Saturated
Porous Solid," J.Geophys.Res. 77:890-900 (1972). -SSS-
(Mixture theory with different velocity fields for the
separate constituents; applied to saturated porous tuff.)

3. Composite Media (cont'd)

- Biot, M.A. "Theory of Propagation of Elastic Waves in a Fluid-Saturated Porous Solid. I. Low-Frequency Range," J.Acoust.Soc.Am. 28:168-178 (1956).
"... II. Higher Frequency Range," J.Acoust.Soc.Am. 28:179-191 (1956).
- Hill, R. "Elastic Properties of Reinforced Solids: Some Theoretical Principles," J.Mech.Phys.Solids 11:357-372 (1963).
(Two bonded isotropic phases.)
- Schiffman, R.L. "The Stress Components of a Porous Medium," J.Geophys.Res. 75:4035-8 (1970). -U.Colo.-
- Mackenzie, J.K. "The Elastic Constants of a Solid Containing Spherical Holes," Proc.Phys.Soc. 63B:2-11 (1950).
- Green, A.E.
Steel, T.R. "Constitutive Equations for Interacting Continua," Int.J.Engng.Sci. 4:483-500 (1966).
(Mixture of non-linear elastic solid and linear viscous fluid; mixture of two non-linear elastic solids.)
- Steel, T.R. "Applications of a Theory of Interacting Continua," Quart.J.Mech.Appl.Math. XX:57-72 (1967).
(Plane waves thru a mixture.)
- Haener, J. "Viscoelastic Wave Propagation in Unidirectional Composites," Whittaker Corp., San Diego, AFML-TR-68-311-Part 4, AD734658, 37pp, May 1971.
(Attenuation calculations.)
- Knollman, G.C. "Wave Propagation in a Medium with Random, Spheroidal Inhomogeneities," J.Acoust.Soc.Am. 36:681-8 (1964).
(Acoustic or electromagnetic waves.)
- Anderholm, N.C.
Anderson, P.D. "Laser-Rating Studies of Composite Materials," J.Appl.Phys. 43:1820-5 (1972). -Sandia-
(Carbon-methacrylate; carbon as particles; experiments and calculations with Mie-Grüneisen equation of state.)
- Smith, R.E. "Ultrasonic Elastic Constants of Carbon Fibers and Their Composites," J.Appl.Phys. 43:2555-61 (1972).
- Nevill, G.E., Jr.
et al "One-Dimensional Wave Pulses in Steel-Epoxy Composites," Exp.Mech. 12:278-282 (1972). -U.Fla.-
(Air-gun impact experiments on long rods.)

4. Spalling

- Erkman, J.O. "Spalling of Aluminum and Copper,"
Foulter Labs., Stanford Res. Inst. TR 015-59, 28pp,
AD229841, Oct 1959.
- Erkman, J.O. "Smooth Spalls and the Polymorphism of Iron,"
J.Appl.Phys. 32:939-944 (1961).
- Erkman, J.O. "Decay of Explosively Induced Shock Waves in Solids and
Spalling of Aluminum,"
Foulter Labs., Stanford Res. Inst. TR 008-60, 16pp,
AD244108, Aug 1960.
- Keller, D.V. "Mechanism of Spall in Lucite,"
Trulio, J.G. J.Appl.Phys. 34:172-5 (1963).
- Butcher, B.M. "Influence of Stress History on Time-Dependent Spall in
et al Metals," AIAA J. 2(6):977-990 (1964). -Sandia-
- Piacesi, R. "A Study of the Role of Mechanical-Strength Properties on
Watt, J.W. the Phenomena of Spallation,"
Naval Ordnance Laboratory NOLTR 66-42, 22pp, Jan 1966.
- Breed, B.R. "Techniques for the Determination of Dynamic-Tensile-
Mader, C.L. Strength Characteristics,"
Venable, D. J.Appl.Phys. 38:3271-5 (1967). -IASL-
- Oscarson, J.H. "Spall Fracture and Dynamic Response of Materials,"
Graff, C.F. Battelle Memorial Inst. BAT-197A-4-3, 115pp, 63 refs,
AD669440, Mar 1968. (Literature review.)
- Nachbar, W. "A Simplified Model for Thermal Shock and Spallation in
Partially Transparent Elastic Materials Under Energetic
Radiation," Calif. U., San Diego, Tech. Report No. 11,
AFOSR 68-1552, AD675645, 35pp, May 1968.
- Isbell, W.M. "Shock Propagation and Fracture in 6061-T6 Aluminum From
Christman, D. Wave Profile Measurements," General Motors Technical Center,
Warren, Mich. MSL-69-60, DASA-2419, AD705536, 38pp, Apr 1970.

4. Spalling (cont'd)

- | | |
|--|---|
| Chilton, F.
Eisler, J.D.
Heubach, H.G. | "Dynamics of Spalling of the Earth's Surface Caused by Underground Explosions,"
J.Geophys.Res. <u>71</u> :5911-9 (1966). (Theory.) |
| Cohen, L.J.
Berkowitz, H.M. | "Time-Dependent Fracture Criteria for 6061-T6 Aluminum Under Stress-Wave Loading in Uniaxial Strain,"
Int.J.Fracture Mech. <u>7</u> :183-196 (1971). |
| Davison, L.
Stevens, A.L. | "Continuum Measures of Spall Damage,"
J.Appl.Phys. <u>43</u> :988-994 (1972). |
| Gusein-Zade, M.I. | "On the Acoustic Theory of Spalling,"
J.Math.Mech. (PMM) <u>22</u> :763-7 (1958). |
| Steffan, K.L.
Holt, A.C. | "Calculated Spall Thresholds for Short Stress Pulses in 6061-T6 Aluminum," Lawrence Livermore Lab. UCRL-51246, 10pp, Jul 1972. (Rectangular stress pulse; Tuler-Butcher cumulative damage spall criterion; WONDY III code.) |
| Thurston, R.S.
Mudd, W.L. | "Spallation Criteria for Numerical Computations,"
Los Alamos Sci.Lab. LA-4013, 12pp, Sep 1968. |
| Tuler, F.R. | "Tensile Strain as a Criterion for Spallation in Metals,"
Effects Technology, Inc. CR-71-36, DASA 2740 T, 19pp, Aug 1971. |
| Tuler, F.R.
Butcher, B.M. | "A Criterion for the Time Dependence of Dynamic Fracture,"
Int.J.Fracture Mech. <u>4</u> :431-7 (1968). -Sandia- |
| Woodruff, L.W.
Giedt, W.H.
Hesse, J.L. | "Surface Melting, Spallation, and Stresses Induced in Metals by Pulsed Electron Beam Heating,"
J.Appl.Mech. <u>38</u> :363-370 (1971). -LRL- |

5. Spherical Waves

- Isenberg, J.
Phaumik, A.K.
Wong, F.S. "Spherical Waves in Inelastic Materials,"
Agabian-Jacobsen Associates, AJA-R-6813-777, DASA-2404,
AD703295, 57pp, Mar 1970. (Finite-element calculations.)
- Blake, F.G., Jr. "Spherical Wave Propagation in Solid Media,"
J.Acoust.Soc.Am. 24:211-215 (1952).
- Bland, D.R. "Dilatational Waves and Shocks in Large Displacement
Isentropic Dynamic Elasticity,"
J.Mech.Phys.Solids 12:245-267 (1964).
(Includes numerical solution for spherical tensile explosion.)
- Mehta, P.K.
Davids, N. "A Direct Numerical Analysis Method for Cylindrical and
Spherical Elastic Waves," AIAA J. 4:112-7 (1966).
(See correction in AIAA J. 9:1887-8 (1971).)
- Mok, C.H. "The Dynamic Expansion of a Spherical Cavity in an Elastic-
Perfectly Plastic Material," Ballistic Res. Labs.
BRL-R-1357, AD654369, 18pp, Feb 1967.
- Garg, S.K. "Spherical Elastic-Plastic Waves,"
Z.A.M.P. 19:243-251 (1968).
(Finite-difference calculations.)
- Garg, S.K. "Numerical Solutions for Spherical Elastic-Plastic Wave
Propagation," Z.A.M.P. 19:778-787 (1968).
- Mok, C.H. "Effects of Solid Strength on the Propagation and Attenua-
tion of Spherical and Plane Shock Waves,"
J.Appl.Phys. 39:2072-81 (1968). -BRL-
- Garg, S.K. "Spherical Elastic-Plastic Waves in Solid Media,"
Toronto U., UTIAS Tech.Note 132, AD690799, 37pp, Feb 1969.
- Morland, L.W. "Spherical Wave Propagation in Elastic-Plastic Work-Hardened
Materials,"
J.Mech.Phys.Solids 17:371-385 (1969). -U.East Anglia-

5. Spherical Waves (cont'd)

- Fowles, R. "Conservation Relations for Spherical and Cylindrical Stress Waves," J.Appl.Phys. 41:2740-1 (1970). -Physics Int'l-
- Garg, S.K. "Spherical Elastic-Plastic Waves in Solid Media," Toronto U., ARL-70-0072, AD709369, 44pp, Apr 1970.
- Mehta, P.K. "Comment on 'A Direct Numerical Analysis Method for
Davids, N. Cylindrical and Spherical Blast Waves',"
Patel, N.T. AIAA J. 9:1887-8 (1971).
(Corrections to previous article, AIAA J. 4:112-7 (1966).)
- Hunter, S.C. "Similarity Solution for the Rapid Uniform Expansion of a
Crozier, R.J.M. Spherical Cavity in a Compressible Elastic-Plastic Solid,"
Quart.J.Mech.Appl.Math. XI(4):467-486 (1968).
- Chadwick, P. "Propagation of Spherical Plastic-Elastic Disturbances
From an Expanded Cavity,"
Quart.J.Mech.Appl.Math. XV:349-376 (1962).
- Morland, L.W. "The Unloading Problem for Spherical Elastic-Plastic
Waves of Small Amplitude,"
J.Mech.Phys.Solids 19:295-309 (1970).
("This paper presents a closed-form solution for a uniform
pressure applied instantaneously and smoothly released on
the surface of a spherical cavity in an infinite elastic-
plastic medium.")
- Eason, G. "Propagation of Waves From Spherical and Cylindrical
Cavities," Z.A.M.P. 14:12-23 (1963).
- Sharpe, J.A. "The Production of Elastic Waves by Explosion Pressures.
I. Theory and Empirical Field Observations,"
Geophysics 7:144-154 (1942).
(Pressure on inside of spherical cavity.)
- Meyer, M.L. "On Spherical Near Fields and Far Fields in Elastic and
Visco-Elastic Solids,"
J.Mech.Phys.Solids 12:77-111 (1964). -U.Sheffield-
- Selberg, H.L. "Transient Compression Waves from Spherical and
Cylindrical Cavities," Arkiv för Fysik 5(7):97-108 (1952).

E. Experimental Methods

1. Reviews

- Bridgman, P.W. The Physics of High Pressure (G. Bell & Sons, 1931; Dover reprint 1970.)
- Swenson, C.A. "Physics at High Pressure," pp 41-147 of F. Seitz & D. Turnbull (eds.), Solid State Physics: Advances in Research and Applications, Vol. 11 (Academic Press, N.Y., 1960).
- Bundy, F.P.
Strong, H.M. "Behavior of Metals at High Temperatures and Pressures," pp 81-146 of F. Seitz & D. Turnbull (eds.), Solid State Physics: Advances in Research and Applications, Vol. 13 (Academic Press, N.Y., 1962).
- McQueen, R.G. "Laboratory Techniques for Very High Pressures and the Behavior of Metals Under Dynamic Loading," in K.A. Gschneidner, Jr., M.T. Hepworth, and N.A.D. Parlee (eds.), Metallurgy at High Pressures and High Temperatures (Gordon & Breach, N.Y., 1964) pp 44-132.
- Austin, I.G. "Solids Under Very High Pressure," Contemp. Phys. 7: 174-191 (1966). -U. Sheffield- (Review of experimental techniques and some results.)
- Rinehart, J.S.
Pearson, J. Behavior of Metals Under Impulsive Loads (American Soc. for Metals, Cleveland, 1954; reprinted by Dover).
- Kolsky, H. "Experimental Wave-Propagation in Solids," in Structural Mechanics, Proceedings of the First Symposium on Naval Structural Mechanics, Stanford U., Aug 1958 (Pergamon, N.Y., 1960) pp 233-262.
- Shewmon, P.G.
Zackay, V.P. (eds.) Response of Metals to High Velocity Deformation (Interscience, N.Y., 1961). Metallurgical Society Conference, Estes Park, Colo., July 11-12, 1960.
- Kolsky, H. Stress Waves in Solids (Clarendon, Oxford, 1953; reprinted by Dover).
- Mumro, D.C. "Production and Measurement of High Pressures," in R.S. Bradley, High Pressure Physics and Chemistry, Volume 1 (Academic Press, N.Y., 1963) pp 11-49.
- Kormer, S.B. "Optical Study of the Characteristics of Shock-Compressed Condensed Dielectrics," Soviet Physics-Uspekhi 11:229-254 (1968). (Review article; 178 refs.)

2. Ultrasonics

- Huntington, H.B. "Ultrasonic Measurements on Single Crystals,"
Phys.Rev. 72:321-331 (1947). -MIT-
- McSkimin, H.J. "Pulse Superposition Method for Measuring Ultrasonic
Wave Velocities in Solids,"
J.Acoust.Soc.Am. 33:12-16 (1961). -Bell Tel.-
- McSkimin, H.J. "Analysis of Pulse Superposition Method for Measuring
Andreatch, P. Ultrasonic Wave Velocities as a Function of Tempera-
ture and Pressure," J.Acoust.Soc.Am. 34:609-615 (1962).
- McSkimin, H.J. "Measurement of Very Small Changes in the Velocity of
Andreatch, P., Jr. Ultrasonic Waves in Solids,"
J.Acoust.Soc.Am. 41:1052-7 (1966).
- Williams, J. "On the Measurement of Ultrasonic Velocity in Solids,"
Lamb, J. J.Acoust.Soc.Am. 30:308-313 (1958).
(Cancellation of two waves from the same transducer.)
- McSkimin, H.J. "Ultrasonic Methods for Measuring the Mechanical
Properties of Liquids and Solids," in W.P. Mason (ed.),
Physical Acoustics, Volume I-Part A (Academic Press,
N.Y., 1964) pp 271-334.
- McSkimin, H.J. "Ultrasonic Measurement Techniques Applicable to Small
Solid Specimens," J.Acoust.Soc.Am. 22:413-8 (1950).
- Heydemann, P. "Ultrasonic Measurements at Very High Pressures," in
W.P. Mason & R.N. Thurston (eds.), Physical Acoustics,
Volume VIII (Academic Press, N.Y., 1971) pp 203-236.

The references above are on experimental techniques. For theory, see
Truett & Elbaum (p. 6). Applications are included in the "Equations of
State" section of this bibliography. Thurston (p. 64) gives a tutorial
paper on the use of ultrasonic velocity data in finding material properties.

3. Static Loading

- Hall, H.T. "Some High-Pressure, High-Temperature Apparatus Design Considerations: Equipment for Use at 100 000 Atmospheres and 3000°C," Rev.Sci.Inst. 29:267-275 (1958).
- Hall, H.T. "Ultra-High-Pressure, High-Temperature Apparatus: the 'Belt'," Rev.Sci.Inst. 31:125-131 (1960).
- Boyd, F.R.
England, J.L. "Apparatus for Phase-Equilibrium Measurements at Pressures up to 50 Kilobars and Temperatures up to 1750°C," J.Geophys.Res. 65:741-8 (1960).

4. Dynamic Loading

- Barker, L.M. "Laser Interferometry in Shock-Wave Research,"
Exp.Mechanics 12:209-215 (1972). -Sandia-
(Review article.)
- Hawke, R.S.
et al "Method of Isentropically Compressing Materials to
Several Megabars," J.Appl.Phys. 43:2734-41 (1972).
(Magnetic flux compression of a tube. Loading occurs
in about 10 microseconds but is slow enough to avoid
shock formation.)
- Balchan, A.S.
Cowan, G.R. "Method for Accelerating Flat Plates to High Velocity,"
Rev.Sci.Inst. 35:937-944 (1964).
(Some velocity is gained by using a driver plate-low
impedance plate-driven plate configuration.)
- Fuller, F.J.A.
Price, J.H. "Dynamic Pressure Measurements to 300 Kilobars with a
Resistance Transducer," Brit.J.Appl.Phys. 15:751-8
(1964). (Manganin is useful because of its very low
temperature coefficient of resistance.)
- Jones, O.E.
Neilson, F.W.
Benedick, W.B. "Dynamic Yield Behavior of Explosively Loaded Metals
Determined by a Quartz Transducer Technique,"
J.Appl.Phys. 33:3224-32 (1962).
(Duraluminum, Armco iron, steels.)
- Barker, L.M.
Hollenbach, R.E. "Interferometer Technique for Measuring the Dynamic
Mechanical Properties of Materials,"
Rev.Sci.Inst. 36:1617-20 (1965).
- Graham, R.A.
Neilson, F.W.
Benedick, W.B. "Piezoelectric Current from Shock-Loaded Quartz--A
Submicrosecond Stress Gauge,"
J.Appl.Phys. 36:1775-83 (1965).
(A quartz disk is impacted by another quartz disk.
Stresses up to 50 kbar are measured.)
- Linde, R.K. "Measuring the Submicrosecond Response of Shock Loaded
Materials," Rev.Sci.Inst. 37:1-7 (1966). (Gas gun.)
- Ahrens, T.J.
Ruderman, M.H. "Immersed-Foil Method for Measuring Shock Wave Profiles
in Solids," J.Appl.Phys. 37:4758-65 (1966). -SRI-
(Shock passes thru Mylar foil into transparent liquid.)
- Fowles, G.R.
Isbell, W.M. "Method for Hugoniot Equation-of-State Measurements at
Extreme Pressures," J.Appl.Phys. 36:1377-9 (1965). -SRI-
(Uses mach stem in a conically convergent shock.)

4. Dynamic Loading (cont'd)

- | | |
|----------------------------------|--|
| Schock, R.N.
Duba, A.G. | "Quasistatic Deformation of Solids with Pressure,"
J.Appl.Phys. <u>43</u> :2204-10 (1972). -LIL-
(Loading to 5 kbar with fluid pressure rather than with
a solid piston; results for Armco iron, Pyrex glass,
PMMA, granite, and limestone.) |
| Lysne, P.C.
Boade, R.R. | "Determination of Release Adiabats and Recentered
Hugoniot Curves by Shock Reverberation Techniques,"
J.Appl.Phys. <u>40</u> :3786-95 (1969). -Sandia- |
| Barker, L.M.
Hollenbach, R.E. | "Laser Interferometer for Measuring High Velocities of
any Reflecting Surface,"
J.Appl.Phys. <u>43</u> :4669-75 (1972). -Sandia-
(Useful for plate-impact experiments.) |

a. Some Results

- Cassity, G.R. "Stress Waves in Solids," J.Appl.Phys. 31:1377-81 (1960).
(Experiments with explosives in contact with metal cylinders.)
- Fowles, G.R. "Attenuation of the Shock Wave Produced in a Solid by a Flying Plate," J.Appl.Phys. 31:655-661 (1960).
- Kolsky, H.
Douch, L.S. "Experimental Studies in Plastic Wave Propagation," J.Mech.Phys.Solids 10:195-223 (1962).
- Keller, D.V. "Shock Properties in Solids and Foams and Studies of Non-Hydrodynamic Attenuation (Experimental Data to Improve Theory)," Nortronics, Newbury Park, Calif., ARD-66-31R, AD636271, 149pp, Mar 1966.
- Alder, B.J. "Physics Experiments with Strong Pressure Pulses," pp 385-419 of W. Paul & D.M. Warschauer (eds.), Solids Under Pressure (McGraw-Hill, N.Y., 1963).
- Jacobs, S.J. "Proceedings: Fourth Symposium (International) on Detonation," Oct 1965, Naval Ordnance Laboratory, Office of Naval Research ACR-126, U.S. Government Printing Office.
- Jacobs, S.J.
Roberts, R. "Proceedings: Fifth Symposium (International) on Detonation," Aug 1970, Naval Ordnance Laboratory, Office of Naval Research ACR-184, U.S. Government Printing Office.

b. Electromagnetic Velocity Gage

Edwards, D.J.
Erkman, J.C.

"The Electromagnetic Velocity Gage and Applications to the Measurement of Particle Velocity in PMMA,"
Naval Ordnance Lab. NOLTR-70-79, AD717346, 48pp, Jul 1970.

Franz, R.E.

"An Electromagnetic Measurement of the Shock Hugoniot of Teflon," Ballistic Res. Labs. BRL-MR-2075, AD716333, 21pp, Nov 1970.

c. Pulsed Electron Beam: Energy Deposition

- Katz, L.
Penfold, A.S. "Range-Energy Relations for Electrons and the Determination of Beta-Ray End-Point Energies by Absorption," *Rev.Mod.Phys.* 24:28-44 (1952). (Aluminum; 0.01-2.5 Mev)
- Spencer, L.V. "Theory of Electron Penetration," *Phys.Rev.* 98:1597-1615 (1955).
- Gross, M.J. "Irradiation Effects in Borosilicate Glass," *Phys.Rev.* 107:368-373 (1957).
- Kanter, H.
Sternglass, E.J. "Interpretation of Range Measurements for Kilovolt Electrons in Solids," *Phys.Rev.* 126:620-6 (1962). (Maximum range in Al, Ni, Ag, Au for 1 to 10 kev.)
- Ehrenberg, W.
King, D.E.N. "The Penetration of Electrons into Luminescent Materials," *Proc.Phys.Soc.* 81:751-766 (1963). (10 to 80 kev.)
- Scott, W.T. "The Theory of Small-Angle Multiple Scattering of Fast Charged Particles," *Rev.Mod.Phys.* 35:231-313 (1963).
- Berger, M.J. "Monte Carlo Calculation of the Penetration and Diffusion of Fast Charged Particles," in B. Alder, et al (eds.), Methods in Computational Physics, Volume 1. Statistical Physics (Academic Press, N.Y., 1963) pp 135-215.
- Nakai, Y. "Energy Dissipation of Electron Beams in Matter," *Jap.J.Appl.Phys.* 2:743-756 (1963).
- Schuracher, B.W. "A Review of the (Macroscopic) Laws for the Electron Penetration Through Matter," in R. Bakish (ed.), First International Conference on Electron and Ion Beam Science and Technology (Wiley, N.Y., 1965) pp 5-70.
- Kessaris, N.D. "Penetration of High-Energy Electron Beams in Water," *Phys.Rev.* 145:164-174 (1966).
- Anderson, W.W. "Electron Beam Excitation in Laser Crystals," *Applied Optics* 5:167-8 (1966). -Stanford U.- (Concerns electron penetration depth.)
- Klein, C.A. "Further Remarks on Electron Beam Pumping of Laser Materials," *Applied Optics* 5:1922-4 (1966). (Energy dissipation of kev electrons.)
- Bishop, H.E. "Electron Scattering in Thick Targets," *Brit.J.Appl.Phys.* 18:703-715 (1967). (Monte Carlo calculations for 5-40 kev.)

c. Pulsed Electron Beam: Energy Deposition (cont'd)

- Zerby, C.D.
Keller, F.L. "Electron Transport Theory, Calculations, and Experiments," Nucl.Sci.Engg. 27:190-218 (1967).
- Mills, D.
et al "A Pulsed Radiation Energy Spectrometer Using Ferro-electrics," IEEE Trans.Nucl.Sci. NS-14(6):245-251 (1967).
- Reimer, L. "Monte-Carlo-Rechnungen zur Elektronendiffusion," Optik 27:86-98 (1968). (9-100 kev)
- Dickinson, W.C.
Lent, E.M. "Calculation of Forward Bremsstrahlung Spectra From Thick Targets," UCRL-50442, 6 Jun 1968, 22pp.
- Roy, R.R.
Reed, R.D. Interactions of Photons and Leptons with Matter (Academic Press, N.Y., 1968).
- Little, R.
Otteson, J.
Childers, F.K. "High Intensity Pulsed Electron Beam Energy Deposition in Solid Dielectrics," IEEE Trans.Nucl.Sci. 250-4 (1969).
- Schallhorn, D.R.
Buxton, L.D. "Predicted and Measured Depth Dose Profiles for Pulsed Electron Spectra," IEEE Trans.Nucl.Sci. 242-9 (1969).
- Shimizu, R.
Murata, K. "Monte Carlo Calculations of the Electron-Sample Interactions in the Scanning Electron Microscope," J.Appl.Phys. 42:387-394 (1971). -Osaka U.- (10-30 kev; Al and Cu.)
- Cosslett, V.E.
Thomas, R.N. "Multiple Scattering of 5-30 kev Electrons in Evaporated Metal Films. I. Total Transmission and Angular Distribution," Brit.J.Appl.Phys. 15:883-907 (1964).
"... II. Range-Energy Relations," Brit.J.Appl.Phys. 15:1283-1300 (1964).
- Buxton, L.D. "The Electron Transport Computer Code ZEBRA 1," Harry Diamond Labs. HDL-TR-1536, 21pp, Jun 1971. (This is a user's manual; FORTRAN listings of the code are not included.)
- Everhart, T.E.
Hoff, P.H. "Determination of Kilovolt Electron Energy Dissipation vs Penetration Distance in Solid Materials," J.Appl.Phys. 42:5837-46 (1971). -U.Calif.Berkeley- ("A universal curve of energy-dissipation range vs normalized electron energy is proposed, which includes the average atomic number Z of the material...")

c. Pulsed Electron Beam: Energy Deposition (cont'd)

- Rauch, J.E. "Electron Spectra Produced by the 705 Febetron at 10, 12, 15, 20, 30, and 35 Kv Charging and the Resultant Dose Depositions in Metallic Elements Ranging from Beryllium to Uranium," Lockheed Missiles & Space Co. IMSC-6-78-69-3, 127pp, Jan 1969.
- Loneragan, J.A.
Jupiter, C.P.
Merkel, G. "Electron Energy Straggling Measurements by Thick Targets of Beryllium, Aluminum, and Gold at 4.0 and 8.0 Mev," J.Appl.Phys. 41:678-688 (1970).
- Birkhoff, R.D. "The Passage of Fast Electrons Through Matter," in S. Flügge (ed.), Handbuch der Physik, Band XXXIV, Korpuskeln und Strahlung in Materie II (Springer-Verlag, Berlin, 1958) pp 53-138.
- Bartine, D.E.
et al "Low-Energy Electron Transport by the Method of Discrete Ordinates," Nucl.Sci.Eng. 48:159-178 (1972). -CRNL- (1-D ANISM code is used for 1, 2.5, 4, and 8 Mev electrons into aluminum and 1 Mev into gold.)
- Rosenstein, M.
Eisen, H.
Silverman, J. "Electron Depth-Dose Distribution Measurements in Finite Polystyrene Slabs," J.Appl.Phys. 43:3191-3202 (1972). (Experimental dose vs depth for 2 Mev electrons.)

- - -

Pulsed electron beam machines are finding considerable application in materials studies (see next page). In order to calculate the stress waves resulting from such loading, one needs the profile of energy vs depth resulting from the electron deposition. This may be done as follows:

- (1) If the deposition takes place in a slab of a single element, the deposition may already have been calculated for the desired machine spectrum (see Rauch, above).
- (2) If the deposition takes place in a slab of a single element but the machine spectrum differs from what has already been done, the dose vs depth can be calculated by folding the desired spectrum with monoenergetic dose-depth data (e.g., from Rauch, above).
- (3) If the target contains slabs of more than one element within the deposition depth, one will have to calculate the depth-dose profile with a computer program such as ZEBRA (Buxton, 1971).
- (4) If the target consists not of slabs but of something like fibers of one element embedded in a different element, one probably has to settle for approximating the target with a slab of some average element.
- (5) If the interaction cannot be approximated by slab symmetry and two-dimensional flow is required, you will exceed your budget.

c. Pulsed Electron Beam: Applications

- Oswald, R.B., Jr. "Fracture of Silicon and Germanium Induced by Pulsed Electron Irradiation,"
IEEE Trans. Nucl. Sci. NS-13:63-69 (1966). -HDL-
- Graham, R.A.
Hutchison, R.E. "Thermoelastic Stress Pulses Resulting from Pulsed Electron Beam," Appl. Phys. Lett. 11:69-71 (1967). -Sandia-
- Oswald, R.B., Jr.
Schallhorn, D.R.
et al "Dynamic Response of Solids Exposed to a Pulsed Electron Beam," Appl. Phys. Lett. 13:279-281 (1968). -HDL-
(Free-surface motion measurements.)
- Woodruff, L.W. "Thermo-Dynamic Effects Induced in Metals by a 2-Mev Pulsed Electron Beam,"
Lawrence Radiation Lab. UCRL-50621, 158pp, Aug 1969.
(Experiments and theory.)
- Perry, F.C. "Laser Interferometer Determination of the Dynamic Response of Aluminum to Intense Electron Pulses,"
Sandia Labs. SC-RR-69-560, 14pp, Sep 1969.
(A room-temperature Grüneisen parameter of $2.00 \pm 15\%$ is found for T6-6061 aluminum.)
- Oswald, R.B., Jr. "Grüneisen Data From the One-Dimensional Thermoelastic Response of Elastic Materials,"
Appl. Phys. Lett. 16:24-26 (1970). -HDL-
(Direct measurement with pulsed e-beam loading.)
- Perry, F.C. "Thermoelastic Response of Polycrystalline Metals to Relativistic Electron Beam Absorption,"
J. Appl. Phys. 41:5017-22 (1970). -Sandia-
- Perry, F.C. "Electron Beam Induced Stress Waves in Solids,"
Appl. Phys. Lett. 17:478-480 (1970). -Sandia-
(Experiments on 6061-T6 Al showed slow rise of plastic wave. WCHDY calculations were used to obtain wave profiles.)
- Woodruff, L.W.
Giedt, W.H.
Hesse, J.L. "Surface Melting, Spallation, and Stresses Induced in Metals by Pulsed Electron Beam Heating,"
J. Appl. Mech. 38:363-370 (1971) -LRL-
- Oswald, R.B., Jr.
McLean, F.B.
Schallhorn, D.R.
Buxton, L.D. "One-Dimensional Thermoelastic Response of Solids to Pulsed Energy Absorption,"
J. Appl. Phys. 42:3463-73 (1971). -HDL-
(From free-surface motion is used to get the Grüneisen parameter for several materials.)
- McLean, F.B.
Oswald, R.B., Jr.
Schallhorn, D.R.
Buxton, L.D. "Temperature Dependence of the Dynamic Response of Si, Ge, and InSb to a Pulsed Electron Beam,"
J. Appl. Phys. 42:3474-78 (1971). -HDL-
(20 to 300°K initial temperature.)

d. Unfocused Laser Beam

Pulsed lasers are capable of giving a pulse of radiation that is deposited so quickly (< 50 nsec) that the energy has no time to be removed by heat conduction or by stress waves. The output characteristics of lasers are described in many books, for example,

B.A. Lengyel, Introduction to Laser Physics (Wiley, N.Y., 1966)

B.A. Lengyel, Lasers, 2nd edition (Wiley, N.Y., 1971).

An unfocused laser beam can give a roughly uniform loading over an area of several square millimeters (or several square centimeters, if a diverging lens is used). The fact that the beam is coherent is of no importance here--it is the short duration and high total energy of the pulse that matter. The loading is not truly uniform because of the mode structure of the beam--the coherence of the light is a disadvantage. For a thin target, this kind of loading gives one-dimensional strain. The beam may penetrate deeply into a transparent material or only 10^{-5} cm into an opaque material. The transparent material can be dyed to reduce the depth of penetration or to confine the absorption to a dyed region inside the material. An unfocused beam produces a loading that may be severe enough to stress a one-micron thick surface layer of a soft metal beyond its yield point, but the stress wave sent into the bulk of the material is usually small--a few bars. This stress may be increased by pressing a transparent material against the loaded surface to remove the free surface.

A focused laser beam gives violent loading and can dig a crater in a metal or punch a hole through a thin sheet. The advantage of the beam coherence is that it allows focusing to a very small area. The loading is not as neat as the one-dimensional strain of the unfocused beam; spherical stress waves are sent out from the crater but they are complicated by relief waves from the free unloaded surface surrounding the crater.

Focused laser beams are not covered in this bibliography. For further information, see:

J.F. Ready, Effects of High-Power Laser Radiation (Academic Press, N.Y., 1971).

d. Unfocused Laser Beam (cont'd)

- White, R.M. "Elastic Wave Generation by Electron Bombardment or Electromagnetic Wave Absorption," J.Appl.Phys. 34:2123-4 (1963). -GE-
- White, R.M. "Generation of Elastic Waves by Transient Surface Heating," J.Appl.Phys. 34:3559-67 (1963). -U.Cal.Berk.-
- Zaker, T.A. "Stress Waves Generated by Heat Addition in an Elastic Solid," J.Appl.Mech. 32:143-150 (1965). -IIT-
- Ready, J.F. "Effects Due to Absorption of Laser Radiation," J.Appl.Phys. 36:462-8 (1965). -HRC-
- Gournay, L.S. "Conversion of Electromagnetic to Acoustic Energy by Surface Heating," J.Acous.Soc.Am. 40:1322-30 (1966). -Mobil-
- Bullough, R. "Elastic Explosions in Solids Caused by Radiation," J.Appl.Phys. 37:2283-87 (1966). -U.Ill.-
- Penner, S.S. "Interaction of Laser Radiation with an Absorbing Semi-Infinite Solid Bar," J.Appl.Phys. 37:2304-08 (1966). -U.Cal.S.D.-
- Sharma, O.P.
- Morland, L.W. "Generation of Thermoelastic Stress Waves by Impulsive Electromagnetic Radiation," AIAA J. 6:1063-66 (1968). -U.Cal.S.D.-
- Rousseau, D.L. "Charged-Particle Emission upon Ruby Laser Irradiation of Transparent Dielectric Materials," J.Appl.Phys. 39:3328-32 (1968). -Frick Chem.Lab.-
- Leroi, G.E.
- Falconer, W.E.
- Rao, D.V.G.L.N. "Laser-Induced Resistivity Changes in Silicon," J.Appl.Phys. 39:4853 (1968). -Maser Optics-
- Harrington, R.E. "Thermal Conduction Near a Metal Surface Exposed to Blackbody Radiation," J.Appl.Phys. 39:3699-3706 (1968). -Union Carbide-
- Bushnell, J.C. "Thermoelastic Stress Production in Solids," J.Appl.Phys. 39:5541-46 (1968). -Sandia Labs.-
- McCloskey, D.J.
- Davit, J. "Mechanism for Laser Surface Damage of Glasses," J.Appl.Phys. 39:6052-56 (1968). -France-
- Steverding, B. (Abstract) "Shock Generation by a Pulsed Laser," Bull.Am.Phys.Soc. Ser. II, 13(12): (Dec 1968). -Redst.Ars.-
- Werkheiser, A.H.
- Sery, R.S. (Abstract) "Magnetic Property Changes in Magnetic Materials Induced by a Q-Switched Unfocused Laser Beam," Bull.Am.Phys.Soc. Ser. II, 14(3):386 (Mar 1969). -NOL-
- Gordon, D.I.
- Lehto, D.L.

d. Unfocused Laser Beam (cont'd)

- Bedair, S.M.
Smith, H.P., Jr. "Atomically Clean Surfaces by Pulsed Laser Bombardment,"
J.Appl.Phys. 40:4776-81 (1969). -U.Cal.Berk.-
- Nunziato, J.W. "Radiation Generated Wave Propagation in Elastic
Nonconductors," Sandia Labs. SC-RR-70-428, 21pp, Jun 1970.
- Hegemier, G.A.
Tzung, F. "Stress-Wave Generation in a Temperature-Dependent
Absorbing Solid by Impulsive Electromagnetic Radiation,"
J.Appl.Mech. 37:339-344 (1970). -U.Cal.S.D.-
- Morland, L.W. "Elastic-Plastic Wave Generation by Impulsive
Electromagnetic Radiation,"
Calif.U.San Diego Tech.Rept.No. 23, AD676324, 30pp, Sep 1968.
(Instantaneous deposition; absorption depth over 1 mm.)
- Morland, L.W. "Plastic Yield and Reverse Yield Waves Generated by
Impulsive Electromagnetic Radiation,"
Calif.U.San Diego Tech.Rept.No. 24, AD678381, 23pp, Oct 1968.
- Anderholm, N.C. "Laser-Generated Stress Waves,"
Appl.Phys.Ltrs. 16:113-5 (1970). -Sandia Labs.-
(A transparent material is used to impede the expansion
of the vaporized absorber.)
- Pearcy, P.S. "Ultrafast Rise Time Laser-Induced Stress Waves,"
Appl.Phys.Ltrs. 16:120-2 (1970).
(Rise times near 1 nsec; amplitude about 5 kbar.)
- Anderholm, N.C.
Roade, R.R. "Laser-Induced Stress Waves in Quartz Phenolic,"
J.Appl.Phys. 43:434-6 (1972). -Sandia-
(Grüneisen parameter of 0.22 is found for 2-D phenolic.)
- Walsh, E.K. "Induced One-Dimensional Waves in Elastic Nonconductors,"
J.Appl.Mech. 34:937-941 (1967). (Theory).
- Apollonov, V.V.
et al "Thermoelastic Deformation of a Solid Surface by a
Laser Beam," JETP Ltrs. 15(5):172-4 (1972).
(Interferometer measurements were made of the bulge
of a fused-quartz disk due to irradiation by a
CO₂ laser beam.)

III. EQUATIONS OF STATE

A. Theory (before 1960)

- Cook, R.K. "Variation of Elastic Constants and Static Strains with Hydrostatic Pressure: A Method for Calculation from Ultrasonic Experiments," J.Acoust.Soc.Am. 29:445-9 (1957). -Bell Tel.-
- Benedek, G.B. "Deduction of the Volume Dependence of the Cohesive Energy of Solids from Shock-Wave Compression Measurements," Phys.Rev. 114:467-475 (1959). (Applied to Be, Al, Co, Ni, Cu, and Ag.)
- Grüneisen, E. "Theorie des festen Zustandes einatomiger Elemente," Ann. der Physik, 4th Series 39:257-306 (1912).

A. Theory (before 1960, cont'd)

- Slater, J.C. "Note on Grüneisen's Constant for the Incompressible Metals," Phys.Rev. 57:744-6 (1940).
- Dugdale, J.S. "The Thermal Expansion of Solids,"
MacDonald, D.K.C. Phys.Rev. 89:832-4 (1953).
- Barron, T.H.K. "On the Thermal Expansion of Solids at Low Temperatures,"
Phil.Mag. 46:720-734 (1955).
- Duvall, G.E. "Entropic Equations of State and Their Application
Zwolinski, B.J. to Shock Wave Phenomena in Solids,"
J.Acoust.Soc.Am. 27:1054-8 (1955).
- Overton, W.C., Jr. "Temperature Variation of the Elastic Constants of Cubic
Caffney, J. Elements. I. Copper," Phys.Rev. 98:969-977 (1955).
- Gilvarry, J.J. "Grüneisen Parameter for a Solid Under Finite Strain,"
Phys.Rev. 102:331-340 (1956).
- Barron, T.H.K. "Grüneisen Parameters for the Equation of State of
Solids," Ann.Phys. 1:77-90 (1957).
- Blackman, M. "On Negative Volume Expansion Coefficients,"
Phil.Mag. 3:831-8 (1958).
- Berger, J. "Au sujet de relation lineaire existant entre la vitesse
Joigneau, S. materielle et la vitesse de l'onde de choc se propageant
dans un metal," Compt.Rend. 249:2506-8 (1959).
- Oldroyd, J.G. "On the Formulation of Rheological Equations of State,"
Proc.Roy.Soc. A200:523-541 (1950).
- Zel'dovich, Ia.B. "Investigations of the Equation of State by Mechanical
Measurements," Soviet Physics-JETP 5:1287-8 (1957).
- Birch, F. "The Effect of Pressure Upon the Elastic Parameters of
Isotropic Solids, According to Murnaghan's Theory of
Finite Strain," J.Appl.Phys. 9:279-288 (1938).
- Birch, F. "Finite Strain of Cubic Crystals,"
Phys.Rev. 71:809-824 (1947). -Harvard U.-
- Gilvarry, J.J. "The Lindemann and Grüneisen Laws,"
Phys.Rev. 102:308-316 (1956). -Rand-
- Gilvarry, J.J. "Grüneisen's Law and the Fusion Curve at High Pressure,"
Phys.Rev. 102:317-325 (1956). -Rand-

A. Theory (cont'd; 1960-1965)

- Kormer, S.B.
Urlin, V.D. "Interpolation Equations of State of Metals for the Region of Ultrahigh Pressures," Soviet Physics-Doklady 5:317-320 (1960).
- Fumi, F.G.
Tosi, M.P. "On the Mie-Grüneisen and Hildebrand Approximations to the Equation of State of Cubic Solids," J.Phys.Chem.Solids 23:395-404 (1962).
- Kormer, S.B.
Funtikov, A.I.
Urlin, V.D.
Kolesnikova, A.N. "Dynamic Compression of Porous Metals and the Equation of State with Variable Specific Heat at High Temperatures," Soviet Physics-JETP 15:477-488 (1962).
- Enig, J.W. "A Complete E,P,V,T,S Thermodynamic Description of Metals Based on the P,u Mirror-Image Approximation," J.Appl.Phys. 34:746-754 (1963).
- Gandel'man, G.M. "Quantum-Mechanical Derivation of an Equation of State of Iron," Soviet Physics-JETP 16:94-103 (1963).
- Backman, M.E. "Form for the Relation Between Stress and Finite Elastic and Plastic Stress under Impulsive Loading," J.Appl.Phys. 35:2524-33 (1964). -NOTS-
- McCloskey, D.J. "An Analytic Formulation of Equations of State," Rand Corp. RM-3905-PR, 93pp, Feb 1964.
- Pastine, D.J. "An Equation of State for Face-Centered Cubic Metals," J.Appl.Phys. 35:3407-14 (1964). -NOL-
- Andersen, W.H. "Evaluation of the Grüneisen Parameter for Compressed Substances - I. Metals," Proc. Fourth Symp. Deton. 205-212 (1965). -SHI-
- Pastine, D.J. "Formulation of the Grüneisen Parameter for Monatomic Cubic Crystals," Phys.Rev. 138:A767-A770 (1965).
- Kopyshv, V.P. "Grüneisen Constant in the Thomas-Fermi Approximation," Soviet Physics-Doklady 10:336-9 (1965).
- Ginell, R.
Quigley, T.J. "Compressibility of Solids and Pait's Law: I: P-V Relationships of the Alkali Metals," J.Phys.Chem.Solids 26:1157-69 (1965). -CUNY-
- Anderson, O.L.
Nafe, J.E. "The Bulk Modulus-Volume Relationship for Oxide Compounds and Related Geophysical Problems," J.Geophys.Res. 70:3951-63 (1965). -Bell Tel.-

A. Theory (1960-1965, cont'd)

- Perzyna, P. "The Constitutive Equations for Rate Sensitive Plastic Materials," *Quart. Appl. Math.* 20:321-332 (1963).
- Green, A.E.
Naghdi, P.M. "A General Theory of an Elastic-Plastic Continuum," *Arch. Rational Mech. Anal.* 18:251-281 (1965).
- Heer, E. "Visco-Elastic-Plastic Continuum Equations with Compressibility Effects," *General Electric Space Sci. Lab. R65SD30*, Reprint No. 350, 38pp, Jul 1965.
- Martin, S.A. "A Constitutive Relation for Compressible Plastic Materials," *Appl. Sci. Res. A* 15:137-140 (1965).
- Cristescu, N. "Loading-Unloading Criteria for Rate Sensitive Materials," *Archiwum Mechaniki Stosowanej* 2(17):291-304 (1965).
- Thurston, R.N. "Ultrasonic Data and the Thermodynamics of Solids," *Proc. IEEE* 53:1320-36 (1965). -Bell Tel.-
("This is primarily a tutorial paper on the use of ultrasonic velocity data, in conjunction with data on the specific heat and thermal expansion, to find the adiabatic and isothermal elastic coefficients and their first derivatives with respect to pressure and temperature.")
- Leibfried, G.
Ludwig, W. "Theory of Anharmonic Effects in Crystals," in F. Seitz & D. Turnbull (eds.), Solid State Physics: Advances in Research and Applications, Volume 12 (Academic Press, N.Y., 1961) pp 275-444.
- Coleman, B.D.
Noll, W. "The Thermodynamics of Elastic Materials with Heat Conduction and Viscosity," *Arch. Rat. Mech. Anal.* 13:167-178 (1963).
- Knopff, L. "Equations of State of Matter at Ultra-High Pressures," in R.S. Bradley (ed.), High Pressure Physics and Chemistry, Volume 1 (Academic Press, N.Y., 1963) pp 247-263.
- Knopoff, L. "Solids: Equations of State of Solids at Moderately High Pressures," in R.S. Bradley (ed.), High Pressure Physics and Chemistry, Volume 1 (Academic Press, N.Y., 1963) pp 227-245.
- Vashchenko, V.Ya.
Zubarev, V.N. "Concerning the Gruneisen Constant," *Soviet Physics-Solid State* 5:653-5 (1963).
(Formula derived from free volume theory.)
- Babb, S.E., Jr. "Parameters in the Simon Equation Relating Pressure and Melting Temperature," *Rev. Mod. Phys.* 35:400-413 (1963).

A. Theory (cont'd; 1966)

- Anderson, C.L. "Derivation of Wachtman's Equation for the Temperature Dependence of Elastic Moduli of Oxide Compounds," Phys.Rev. 144:553-7 (1966). -Bell Tel.-
- Anderson, C.L. "The Use of Ultrasonic Measurements Under Modest Pressure to Estimate Compression at High Pressure," J.Phys.Chem.Solids 27:547-565 (1966). -Bell Tel.-
- Huang, Y.N. "Thermodynamics of Shock Compression of Metals," J.Chem.Phys. 45:1979-84 (1966). -Watervliet-
- Kraut, E.A.
Kennedy, G.C. "New Melting Law at High Pressures," Phys.Rev.Ltrs. 16:603-9 (1966). -UCLA-
- Kraut, E.A.
Kennedy, G.C. "New Melting Law at High Pressures," Phys.Rev. 151:668-675 (1966). -UCLA-
- Pastine, D.J. "Thermal Expansion and Structure of Anisotropic Monatomic Solids," Phys.Rev. 148:748-758 (1966).
- Takeuchi, H.
Kanamori, H. "Equations of State of Matter from Shock Wave Experiments," J.Geophys.Res. 71:3985-94 (1966).
- Urlin, V.D. "Melting at Ultra High Pressures in a Shock Wave," Soviet Physics-JETP 22:341-6 (1966).
- Wang, C.-C.
Bowen, R.M. "On the Thermodynamics of Non-Linear Materials with Quasi-Elastic Response," Arch.Rat.Mech.Anal. 22:79-99 (1966).
- Coleman, B.D.
Gurtin, M.E. "Thermodynamics and One Dimensional Shock Waves in Materials With Memory," Proc.Roy.Soc. A292:562-574 (1966).
- Evdokimova, V.V. "Some Relationships Governing the P-T Phase Diagrams and Polymorphic Transformations of Elements Under High Pressures," Soviet Physics-Uspekhi 9:54-72 (1966). (112 refs.)

A. Theory (cont'd; 1967)

- Anderson, O.L.
Soga, N. "A Restriction to the Law of Corresponding States,"
J.Geophys.Res. 72:6754-7 (1967). -Lamont-
- Brugger, K.
Fritz, T.C. "Grüneisen Gamma from Elastic Data,"
Phys.Rev. 157:524-531 (1967). -Bell Tel.-
- Huang, Y.K. "On Static and Dynamic Compressibilities of Debye Solids
at High Pressures,"
J.Chem.Phys. 46:4570-5 (1967). -Watervliet-
- Wallace, D.C. "Thermoelasticity of Stressed Materials and Comparison
of Various Elastic Constants,"
Phys.Rev. 162:776-789 (1967). -Sandia-
- Barsch, G.R. "Adiabatic, Isothermal, and Intermediate Pressure
Derivatives of the Elastic Constants for Cubic Symmetry.
I. Basic Formulae,"
Phys.Stat.Solidi 19:129-138 (1967).
- Barsch, G.R.
Chang, Z.P. "Adiabatic, Isothermal, and Intermediate Pressure
Derivatives of the Elastic Constants for Cubic Symmetry.
II. Numerical Results for 25 Materials,"
Phys.Stat.Solidi 19:139-151 (1967).
- Thomas, T.Y. "Theoretical Effect of Large Hydrostatic Pressures on
the Tensile Strength of Materials,"
Proc.Nat.Acad.Sci. 57:1195-7 (1967).
- Royce, E.B. "Stability of the Electronic Configuration and Compressi-
bility of Electron Orbitals in Metals Under Shock-Wave
Compression," Phys.Rev. 164:929-943 (1967).
- Key, S.W. "Grüneisen Tensor for Anisotropic Materials,"
J.Appl.Phys. 38:2923-8 (1967).

A. Theory (cont'd; 1968)

- Duvall, G.E.
Fowles, G.R.
et al "Equations of State in Solids,"
Wash.St.U. WSU-SDL-68-01, AD680960, 130pp, Feb 1968.
(Melting solids.)
- Bansigir, K.G. "Evaluation of the Grüneisen Constant,"
J.Appl.Phys. 39:4024-6 (1968). -Osmania U.-
- Barsch, G.R.
Chang, Z.P. "Second- and Higher-Order Effective Elastic Constants
of Cubic Crystals under Hydrostatic Pressure,"
J.Appl.Phys. 39:3276-84 (1968). -Penn.St.U.-
- Coleman, B.D. "On the Use of Symmetry to Simplify the Constitutive
Equations of Isotropic Materials with Memory,"
Proc.Roy.Soc. A306:449-476 (1968).
- Heyda, J.F. "Correlation of Two 'Universal' Hugoniot,"
J.Appl.Phys. 39:4873 (1968).
- Johnson, J.N. "Single-Particle Model of a Solid: The Mie-Grüneisen
Equation," Am.J.Phys. 36:917-9 (1968). -Sandia-
- Pastine, D.J.
Forbes, J.W. "Simplified Theory of Anharmonic Contributions to the
Thermodynamic Properties of Solid Sodium Metal,"
Phys.Rev. 175:905-912 (1968). -NOL-
- Pastine, D.J. "P, v, T Equation of State for Polyethylene,"
J.Chem.Phys. 49:3012-22 (1968). -NOL-
- Pastine, D.J. "Accurate Relations Determining the Volume Dependence
of the Quasi-harmonic Grüneisen Parameter,"
Phys.Rev.Ltrs. 21:1582-5 (1968). -NOL-
- Rybakov, A.F. "Empirical Formule for the Relationship Between the
Velocity of Sound, Density, and Pressure in a Shock Wave,"
Soviet Physics-Acoustics 14:115-7 (1968).
- Swenson, C.A. "Equation of State of Cubic Solids: Some Generalizations,"
J.Phys.Chem.Solids 29:1337-48 (1968). -Iowa St.Coll.-
- Thomas, T.Y. "Stress-Strain Relations for Crystals Containing Plastic
Deformation," Proc.Nat.Acad.Sci. 60:1102-4 (1968).
- Anderson, O.L. "Some Remarks on the Volume Dependence of the Grüneisen
Parameter," J.Geophys.Res. 73:5187-94 (1968).
(V dependence at low and at high P are very different.)
- Anderson, O.L. "On the Use of Ultrasonic and Shock-Wave Data to
Estimate Compressions at Extremely High Pressures,"
Phys.Earth Planet.Interiors 1:169-176 (1968).

A. Theory (cont'd; 1969)

- Bobrovskii, S.V. "Construction of Approximate Shock Adiabats of Solids
Gogolev, V.H. in the Hydrodynamic Region,"
Zamyshlyayev, B.V. Soviet Physics-Doklady 14:65-67 (1969).
- Foltz, J.V. "Theoretical Hugoniot Stress-Temperature-Strain
Grace, F.I. States for Aluminum and Copper,"
J.Appl.Phys. 40:4195-9 (1969). -NWL-
- Fromme, J.A. "A Practical Model of Three-Dimensional Viscoelasto-
plasticity," Kaman Nuclear KN-69-500(R), AD699835,
39pp, Nov 1969. (For missile response codes.)
- Huang, Y.K. "On the Tait Equation of Compressibility for Solids,"
J.Phys.Chem. 73:2459-60 (1969). -Watervliet-
- Johnson, J.N. "Constitutive Relation for Rate-Dependent Plastic
Flow in Polycrystalline Metals,"
J.Appl.Phys. 40:2287-93 (1969). -Sandia-
- Kratochvil, J. "Thermodynamics of Elastic-Plastic Materials as a
Dillon, O.W., Jr. Theory with Internal State Variables,"
J.Appl.Phys. 40:3207-18 (1969). -U.Kentucky-
- Thomsen, L. "On the High-Temperature Equation of State of Solids,"
Anderson, O.L. J.Geophys.Res. 74:981-991 (1969). -Lamont-
- Yeh, G.C.K. "A Comparison of Various Elasticity Formulations
Valid for all Admissible Values of Poisson's Ratio,"
Astronautica Acta 14:317-326 (1969). -TRW-
- Perks, V.J. "Natural Stress," Int.J.Non-Linear Mech. 4:7-16 (1969).
Durelli, A.J. (Introduces an analog of natural strain.)
- Knopoff, L. "Comments on the Interrelationships Between Grüneisen's
Shapiro, J.N. Parameter and Shock and Isothermal Equations of State,"
J.Geophys.Res. 74:1439-50 (1969). -UCLA-
- Shapiro, J.N. "Reduction of Shock-Wave Equations of State to
Knopoff, L. Isothermal Equations of State,"
J.Geophys.Res. 74:1435-8 (1969). -UCLA-

A. Theory (cont'd; 1970)

- Anderson, O.L. "Elastic Constants of the Central Force Model for Three Cubic Structures: Pressure Derivatives and Equations of State," J.Geophys.Res. 75:2719-40 (1970).
(See discussion in J.Geophys.Res. 76:2796-7 (1971).)
- Appleby, E.J. "Role of Constitutive Equations of Function Type in Modelling Some Commonplace Mechanical Behavior," J.Appl.Phys. 41:4902-12 (1970). -U.S.Steel-
- Barker, B.E., Jr. "Grüneisen Parameter from Thermal Conductivity Measurements Under Pressure," J.Chem.Phys. 53:2616-20 (1970). -U.Va.-
- Chen, R.Y.S.
- Dandekar, D.P. "Iterative Procedure to Estimate the Values of Elastic Constants of a Cubic Solid at High Pressures from the Sound Wave Velocity Measurements," J.Appl.Phys. 41:667-672 (1970). -Wash.St.U.-
- Fowles, R. "Determination of Constitutive Relations from Plane Wave Experiments," Wash.St.U. WSU-SDL-70-01, AD709736, 74pp, Apr 1970. (Review paper.)
- Grover, R. "Comments on the Comparison of Dynamic and Static Compression Data," J.Phys.Chem.Solids 31:2347-51 (1970).
- Mao, N.-H. "Empirical Equation of State for High Compression," J.Geophys.Res. 75:7508-12 (1970). -Harvard U.-
- Pastine, D.J. "On the Accuracy of the Wachtman-Anderson Relation," J.Geophys.Res. 75:7421-5 (1970). -NOL-
- Pastine, D.J. "Theoretical Estimates of Elastic Relief Wave Velocities for Metals with Applications to Al and Cu," J.Appl.Phys. 41:2743 (1970). -NOL-
- O'Keeffe, D.J.
- Thomsen, L. "On the Fourth-Order Anharmonic Equation of State of Solids," J.Phys.Chem.Solids 31:2003-16 (1970).

A. Theory (cont'd; 1971)

- Anderson, O.L.
Demarest, H.H., Jr. "Elastic Constants of the Central Force Model for Cubic Structures: Polycrystalline Aggregates and Instabilities," J.Geophys.Res. 76:1349-69 (1971). (Polycrystalline aggregates of crystallites of NaCl, ZnS, CsCl, CaF_2 .)
- Andrews, D.J. "Calculation of Mixed Phases in Continuum Mechanics," J.Comput.Phys. 7:310-326 (1971). -WSU-
- Cowperthwaite, M.
Williams, R.F. "Determination of Constitutive Relationships with Multiple Gauges in Nondivergent Waves," J.Appl.Phys. 42:457-462 (1971). (Velocity-time or stress-time records from Lagrangian gauges can be used to calculate constitutive relationships. This article develops the theoretical basis for this.)
- Duvall, G.E.
Tung, C.T.
Taylor, S.M. "Equation of State of Solids," Wash.Stat. U. WSU-SDL-70-C2, BRL-CR-24, AD719307, 71pp. Jan 1971. (On Eyring's significant structure theory.)
- Harris, P. "The Grüneisen Constant of Porous Materials in Energy Deposition Experiments," Picatinny Arsenal Tech. Report 4255, 24pp, Aug 1971. (Stress relief occurs while the energy is being deposited.)
- Holder, J.
Granato, A.V. "Third-Order Elastic Constants and Thermal Equilibrium Properties of Solids," in W.P. Mason & R.N. Thurston (eds.), Physical Acoustics, Volume VIII (Academic Press, N.Y., 1971) pp 237-277.
- Kratochvil, J. "Finite-Strain Theory of Crystalline Elastic-Inelastic Materials," J.Appl.Phys. 42:1104-8 (1971).
- Mathur, S.S.
Sharma, Y.P.
Gupta, P.N. "Lattice Theory of Second- and Third-Order Elastic Constants of Aluminum, Copper, and Nickel," J.Appl.Phys. 42:5335-42 (1971). -IIT, India-
- McLachlan, D., Jr. "Effect of Pressure on the Melting Temperature of Metals," J.Geophys.Res. 76:2780-89 (1971).
- Royce, E.B. "GRAY, A Three-Phase Equation of State for Metals," Lawrence Livermore Lab. UCL-51121, 48pp, Sep 1971.
- Ruppin, R. "Grüneisen Parameter for Born-von Kármán Lattices," Phys.Rev. B 3:1497-8 (1971). -URC-
- Ryabinin, Yu.N.
Beresnev, B.I.
Martinov, B.D. "Mechanical Properties and Processes in Solids under High Pressure," J.Geophys.Res. 76:1370-75 (1971). ("Increased plasticity of brittle solids resulting from pressure and its causes are considered...")

A. Theory (1971, cont'd)

Zharkov, V.N.	<u>Equations of State for Solids at High Pressures and</u>
Kalinin, V.A.	<u>Temperatures</u> (Consultants Bureau, N.Y., 1971) 257pp.
	(Translated from 1968 Russian book.)

A. Theory (cont'd; 1972)

- Ching, H.Ma "Idealized Dynamic Stress-Strain Curve of Uniaxial Compression of Metallic Solids," Phys.Rev. B 5:2826-9 (1972).
(A dynamic stress-strain curve is suggested which is good when compression rate is very high. A second cusp between the Hugoniot elastic limit and the "stable shock threshold" is predicted.)
- Prieto, F.E. "Volume Derivative of the Grüneisen Parameter at Zero-Pressure," J.Phys.Chem.Solids 33:797-800 (1972).
(Second order series expansion in compression. Quadratic shock velocity vs particle velocity relation is considered.)
- Abel, A.
Muir, H. "The Bauschinger Effect and Discontinuous Yielding," Phil.Mag. 26:489-504 (1972).
("...involves not only the initial yield strength, but the entire stress-strain curve after prestraining.")
- Brandt, N.B.
et al "Influence of Pressure on the Fermi Surface of Metals," Soviet Physics-Uspeski 14:438-454 (1972). (75 refs.)

B. Collections of Data

- Walsh, J.M. "Equation of State of Metals from Shock Wave Measurements,"
Christian, R.H. Phys.Rev. 97:1544-56 (1955).
- Walsh, J.M. "Shock-Wave Compressions of Twenty-Seven Metals.
Rice, M.H. Equations of State of Metals,"
McQueen, R.G. Phys.Rev. 108:196-216 (1957).
Yarger, F.L.
- Rice, M.H. "Compression of Solids by Strong Shock Waves," in
McQueen, R.G. F. Seitz & D. Turnbull (eds.), Solid State Physics,
Walsh, J.M. Advances in Research and Applications, Volume 6
(Academic Press, N.Y., 1958) pp 1-63.
- McQueen, R.G. "Equation of State for Nineteen Metallic Elements
Marsh, S.P. From Shock-Wave Measurements to Two Megabars,"
J.Appl.Phys. 31:1253-69 (1960).
- Al'tshuler, L.V. "Shock Adiabats and Zero Isotherms of Seven Metals at
High Pressures," Soviet Physics-JETP 15:65-74 (1962).
(Cu, Fe, Ni, Zn, Cd, Sn, and Pb.)
- Gschneidner, K.A. "Physical Properties and Interrelationships of Metallic
and Semimetallic Elements," in F.Seitz & D.Turnbull (eds.),
Solid State Physics: Advances in Research and Applications,
Volume 16 (Academic Press, N.Y., 1964) pp 275-426.
- Anderson, G.D. "A Summary of the Soviet Papers on the High Pressure
Equation of State of Metals,"
AFWL-TR-65-130, AD621487, 52pp, Sep 1965.
- Graham, R.A. "A Summary of Hugoniot Elastic Limit Measurements,"
Jones, O.E. Sandia Labs. SC-R-68-1857, 13pp, Oct 1968.
- Lawrence, R.J. "Dynamic Material Property Library,"
Mason, D.S. Sandia Labs. SC-DR-68-885, 58pp, Dec 1968.
Benzley, S.E. (Computer routines for use with WONDY and TOODY. Tables
of data given for Al fccm, Al 1060, Al 2024, Al 6061, Be,
Comp B, Cu, Au, pyrolytic graphite, Fe fccm, Fe, Fe,
PEX-9404, TNT, W, U, water.)
- Bakken, L.R. "An Equation-of-State Handbook (Conversion Relations
Anderson, P.D. Between the WONDY/TOODY and the PUFF/KC/HEMP Classes
of Shock Wave Propagation Computer Codes),"
Sandia Labs. SCL-DR-68-123, 54pp, Jan 1969.
(Includes tables of data for 40 materials.)

B. Collections of Data (cont'd)

- Hanlein, S.L.
Hinckley, W.M.
Stecher, F.P. "Comparison of Mechanical and Acoustic Properties for Selected Nonferrous, Ferrous, and Plastic Materials," Naval Ordnance Lab. NOLTR-70-141, 107pp, Jul 1970. (Ordered lists of density, sound speed, etc. are given for 356 non-ferrous, 173 ferrous, and 67 plastic materials.)
- Coleburn, N.L. "Dynamic Bulk Moduli of Several Solids Impacted by Weak Shock Waves," J.Acoust.Soc.Am. 47:269-272 (1970). (Brass, Al, boron carbide, vinylidene chloride, TNT, plexiglas, nylon, epoxy, teflon.)
- Al'tshuler, L.V.
Krupnikov, K.K.
Brazhnik, M.I. "Dynamic Compressibility of Metals Under Pressures from 400,000 to 4,000,000 Atmospheres," Soviet Physics-JETP 24:614-619 (1958). (Cu, Zn, Ag, Cd, Sn, Au, Pb, Bi)
- van Thiel, M. "Compendium of Shock Wave Data," UCRL-50108, several volumes, Jun 1966.
- McQueen, R.G.
Marsh, S.P.
Taylor, J.W.
Fritz, J.N.
Carter, W.J. "The Equation of State of Solids from Shock Wave Studies," in R. Kinslow, High-Velocity Impact Phenomena (Academic Press, N.Y., 1970) pp 293-417. (Good review article with data given for a large number of substances.)
- Vaidya, S.N.
Kennedy, G.C. "Compressibility of 18 Metals to 45 kbar," J.Phys.Chem.Solids 31:2329-45 (1970). -UCIA- (Ag, Al(6061T6), Al, Ba, Bi, Ca, Cd, Cu, Fe, In, La, Mo, Ni, Pb, Sn, Ta, Ti, Zn; pyrophyllite, boron nitride, talc.)
- Dricamer, H.G.
et al "X-Ray Diffraction Studies of the Lattice Parameters of Solids under Very High Pressure," in F. Seitz & D. Turnbull (eds.), Solid State Physics: Advances in Research and Applications, Volume 19 (Academic Press, N.Y., 1966) pp 135-228. (Ionic, molecular crystals; metals; to 500 kbar.)
- Birch, F. "Compressibility; Elastic Constants," in S.P. Clark, Jr. (ed.), Handbook of Physical Constants, revised edition (Geological Society of America, 1966). (Tables of data for elements, simple compounds, many rocks and minerals; nearly 300 refs.)
- Vaidya, S.N.
Kennedy, G.C. "Compressibility of 22 Elemental Solids to 45 Kb," J.Phys.Chem.Solids 33:1377-89 (1972).
- Gray, D.E.(ed.) American Institute of Physics Handbook, 3rd Edition (A.I.P., N.Y., 1972). 2200pp.

C. Metals

1. Miscellaneous Metals

- Daniels, W.E.
Smith, C.S. "Pressure Derivatives of the Elastic Constants of Copper, Silver, and Gold to 10 000 Bars," Phys.Rev. 111:713-721 (1958).
- Chang, Y.A.
Himmel, L. "Temperature Dependence of the Elastic Constants of Cu, Ag, and Au Above Room Temperature," J.Appl.Phys. 37:3567-72 (1966). -LRL-
- Jones, A.H.
Isbell, W.M.
Maiden, C.J. "Measurement of the Very-High-Pressure Properties of Materials Using a Light-Gas Gun," J.Appl.Phys. 37:3493-99 (1966). -GMRDL- (Hugoniot data for Fansteel 77, W, Au to 6 Mbar.)
- Rohde, R.W.
Pitt, G.H. "Dislocation Velocities in Nickel Single Crystals," J.Appl.Phys. 38:876-9 (1967). -U.Utah- (Data at various T as function of stress.)
- Fuller, P.J.A.
Price, J.H. "Dynamic Stress-Strain Release Paths for Aluminum and Magnesium Measured to 200 kb," Brit.J.Appl.Phys. D2:275-286 (1969). -UKAEA-
- Grace, F.I. "Shock-Wave Strengthening of Copper and Nickel," J.Appl.Phys. 40:2649-53 (1969). -NWL-
- Gust, W.H.
Royce, E.B. "Shock-Induced Phase-Transition Pressures in Fe-Cr and Fe-Cr-Ni Alloys," J.Appl.Phys. 41:2443-6 (1970).
- Coleburn, N.L.
Forbes, J.W. "Anomalous Effect of Temperature on Shock-Wave Propagation in Cu-Zn," J.Appl.Phys. 40:4624-6 (1969).
- Christou, A.
Brown, N. "High-Pressure Phase Transitions and Demagnetization in Shock Compressed Fe-Mn Alloys," J.Appl.Phys. 42:4160-70 (1971). (Transition pressure drops from 133 kbar for pure iron to 70 kbar for iron with 14% Mn.)
- Alers, G.A.
Neighbours, J.R. "The Elastic Constants of Zinc Between 4.2° and 670°K," J.Phys.Chem.Solids 7:58-64 (1958). (Ultrasonic-pulse experiments.)
- Hiki, Y.
Thomas, J.F., Jr.
Granato, A.V. "Anharmonicity in Noble Metals: Some Thermal Properties," Phys.Rev. 153:764-771 (1967). -U. Ill.- (Copper, silver, gold; calculations.)
- Hsieh, K.
Bolsaitis, P. "An Equation of State of the Noble Metals Based on Their Elastic and Cohesive Properties," J.Phys.Chem.Solids 32:1838-47 (1972). (Calculations.)

2. Alkali Metals

- Rice, M.H. "Pressure-Volume Relations for the Alkali Metals from Shock-Wave Measurements," J.Phys.Chem.Solids 26:483-492 (1965). -IASL-
- Ehrenfeld, J.
Krimsky, S.
Selvitella, J. "Hugoniot Equation of State of Alkali Metals," J.Appl.Phys. 37:4737-8 (1966). -GCA Corp.-
- Pastine, D.J. "Thermal Contributions to the Elastic Constants of Sodium," J.Phys.Chem.Solids 28:522- (1966). -NOL-
- Pastine, D.J. "P, V, E, T Equation of State of Metallic Sodium in the Classical Region of Temperature," Phys.Rev.Ltrs. 18:1187-9 (1967). -NOL-
- Pastine, D.J.
Forbes, J.W. "Simplified Theory of Anharmonic Contributions to the Thermodynamic Properties of Solid Sodium Metal," Phys.Rev. 175:905-912 (1968). -NOL-
- Vaidya, S.N.
Getting, I.C.
Kennedy, G.C. "The Compression of the Alkali Metals to 45 kbar," J.Phys.Chem.Solids 32:3545-56 (1971). -UCLA-
(New experimental results differ from Bridgman's.)
- Grover, R. "Thermal Properties of Alkali Metals From Static and Dynamic Compressibilities," J.Phys.Chem.Solids 32:2539-44 (1971). -IRI-
- Ginell, R.
Quigley, T.J. "Compressibility of Solids and Tait's Law: I: P-V Relationships of the Alkali Metals," J.Phys.Chem.Solids 26:1157-69 (1965). -CUNY-
- Pavlov, S.D. "Theory of the Equation of State of Potassium, Rubidium, and Cesium," Soviet Physics J. 10:35-40 (1967).
- Luedemann, H.D.
Kennedy, G.C. "Melting Curves of Lithium, Sodium, Potassium, and Rubidium to 80 Kilobars," J.Geophys.Res. 73:2795-2805 (1968). -UCLA-
- Grover, R.
Keeler, R.N.
Rogers, F.J.
Kennedy, G.C. "On the Compressibility of the Alkali Metals," J.Phys.Chem.Solids 30:2091-2103 (1969). -LRL-
(Shock wave and static data are inconsistent above 40 kbar. Inaccuracies in the static data are the likely cause.)

3. Aluminum

- Perry, F.C. "Laser Interferometer Determination of the Dynamic Response of Aluminum to Intense Electron Pulses," Sandia Labs. SC-RR-69-560, 14pp, Sep 1969. (A room-temperature Grüneisen parameter of $2.00 \pm 15\%$ is found for T6-6061 aluminum.)
- Perry, F.C. "Electron Beam Induced Stress Waves in Solids," Appl.Phys.Ltrs. 17:478-480 (1970). -Sandia- (Experiments on 6061-T6 aluminum showed slow rise of the plastic wave. WONDY calculations were used to obtain wave profiles.)
- Erkman, J.O. "Spalling of Aluminum and Copper," Poulter Labs., Stanford Res. Inst. TR 015-59, 28pp, AD229841, Oct 1959.
- Erkman, J.O. "Decay of Explosively Induced Shock Waves in Solids and Spalling of Aluminum," Poulter Labs., Stanford Res. Inst. TR 008-60, 16pp, AD244108, Aug 1960.
- Isbell, W.M.
Christman, D. "Shock Propagation and Fracture in 6061-T6 Aluminum From Wave Profile Measurements," General Motors Technical Center, Warren, Mich. MSL-69-60, DASA-2419, AD705536, 38pp, Apr 1970.
- Hofmann, R.
Andrews, D.J.
Maxwell, D.E. "Computed Shock Response of Porous Aluminum," J.Appl.Phys. 39:4555-62 (1968). -PI-
- Pastine, D.J.
et al "Theoretical Shock Properties of Porous Aluminum," J.Appl.Phys. 41:3144-47 (1970). -NOL-
- Lazarus, D. "The Variation of the Adiabatic Elastic Constants of KCl, NaCl, CuZn, Cu, and Al with Pressure to 10,000 bar," Phys.Rev. 76:545-553 (1949).
- Mallory, H.D. "Propagation of Shock Waves in Aluminum," J.Appl.Phys. 26:555-9 (1955). (Plate-slap experiments.)
- Waser, W.H.
Rand, J.L.
Marshall, J.M. "Stress-Wave Propagation in Aluminum," Naval Ordnance Laboratory NOLTR 63-141, 23pp, Jul 1963. (A one-dimensional analysis gives good agreement with air-gun tests on 7075-T6 aluminum.)
- Goranson, R.W.
et al "Dynamic Determination of the Compressibility of metals," J.Appl.Phys. 26:1472-9 (1955). (24 ST Duralumin for the range 0.1 to 0.3 megabars.)

3. Aluminum (cont'd)

- Doran, D.G.
Fowles, G.R.
Peterson, G.A. "Shock-Wave Compression of Aluminum,"
Phys.Rev.Ltrs. 1:402-4 (1958).
(Reflected-light techniques useful in 50-500 kbar range.)
- Erkman, J.O. "Explosively Induced Nonuniform Oblique Shocks,"
Phys.Fluids 1:535-540 (1958).
(Method of characteristics calculations for Al and Cu.)
- Katz, S.
Doran, D.G.
Curran, D.R. "Hugoniot Equation of State of Aluminum and Steel from
Oblique Shock Measurements,"
J.Appl.Phys. 30:568-576 (1959).
(40-180 kbar for Al. Low-carbon steel shows phase transition.)
- Al'tschuler, L.V. "Equation of State for Aluminum, Copper, and Lead in the
High Pressure Region,"
Soviet Physics-JETP 11:573-9 (1960).
- Al'tschuler, L.V. "The Isentropic Compressibility of Aluminum, Copper, Lead,
and Iron at High Pressures,"
Soviet Physics-JETP 11:766-775 (1960).
- Fowles, G.R. "Shock Wave Compression of Hardened and Annealed 2024 Aluminum,"
J.Appl.Phys. 32:1475-87 (1961).
- Curran, D.R. "Nonhydrodynamic Attenuation of Shock Waves in Aluminum,"
J.Appl.Phys. 34:2677-85 (1963). -SRI-
- Lundergan, C.D.
Herrmann, W. "Equation of State of 6061-T6 Aluminum at Low Pressures,"
J.Appl.Phys. 34:2046-52 (1963). -Sandia- (0-31 kbar.)
- Barker, L.M.
Lundergan, C.D.
Herrmann, W. "Dynamic Response of Aluminum,"
J.Appl.Phys. 35:1203-23 (1964). -Sandia-
- Hartman, W.F. "Determination of Unloading Behavior of Uniaxially Strained
6061-T6 Aluminum from Residual Strain Measurements,"
J.Appl.Phys. 35:2090-6 (1964). -Sandia-
- Curran, D.R. "Residual Strains in Shock-Loaded Aluminum,"
J.Appl.Phys. 36:2591-2 (1965). -Norwegian DRE-
- Anderson, G.D.
et al "Equation of State of Solids: Aluminum and Teflon,"
AFWL-TR-65-147, 58pp, Dec 1965. AD625579.
- Morgan, D.T.
et al "Measurement of the Grüneisen Parameter and the Internal
Energy Dependence of the Solid Equation of State for
Aluminum and Teflon," AVCO, AFWL-TR-65-117, 128pp, Oct 1965.
- Barker, L.M.
Butcher, B.M.
Karnes, C.H. "Yield-Point Phenomenon in Impact-Loaded 1060 Aluminum,"
J.Appl.Phys. 37:1989-91 (1966). -Sandia-
(The elastic wave shows a peak and an unexpected decrease
before arrival of the plastic wave.)
- Munson, D.E.
Barker, L.M. "Dynamically Determined Pressure-Volume Relationships for
Aluminum, Copper, and Lead,"
J.Appl.Phys. 37:1052-60 (1966). -Sandia-

3. Aluminum (cont'd)

- Asay, J.R. "Ultrasonic Studies of 1060 and 6061-T6 Aluminum,"
Guenther, A.H. J.Appl.Phys. 38:4086-8 (1967). -AFWL-
- Erkman, J.O. "Attenuation of Shock Waves in Aluminum,"
Christensen, A.B. J.Appl.Phys. 38:5395-5403 (1967). -SRI-
- Holt, D.L. "The Strain-Rate Dependence of the Flow Stress in Some
et al Aluminum Alloys," ASM Trans. 60:152-9 (1967). -GMTC-
- Mader, C.L. "One-Dimensional Elastic-Plastic Calculations for
Aluminum," Los Alamos Sci. Lab. LA-3678, Feb 1967.
- McKenna, P. "Volume Dependence of the Grüneisen Parameter for
Pastine, D.J. Aluminum," J.Appl.Phys. 39:6104 (1968). -NOL-
- Bertholf, L.D. "Axisymmetric Elastic-Plastic Wave Propagation in
Karnes, C.H. 6061-T6 Aluminum Bars of Finite Length,"
J.Appl.Mech. 36:533-541 (1969). -Sandia-
(End-on impact of two identical aluminum bars is studied
experimentally and calculated with the 100DY code.)
- Foltz, J.V. "Theoretical Hugoniot Stress-Temperature-Strain States
Grace, F.I. for Aluminum and Copper,"
J.Appl.Phys. 40:4195-9 (1969). -NWL-
- Fuller, P.J.A. "Dynamic Stress-Strain Release Paths for Aluminum and
Price, J.H. Magnesium Measured to 200 kb," Brit.J.Appl.Phys.
(J.Phys.D), Ser. 2, Vol. 2, 275-286 (1969). -UKAEA-
- Fyfe, I.M. "The Dynamic Plastic Response of Aluminum to Plane Strain
Swift, R.P. Cylindrical Stress Waves," Wash.U., Seattle, AD695703,
77pp, Jul 1969. (Exploding wire in hollow cylinder.)
- Ho, P.S. "Pressure Dependence of the Elastic Constants for
Ruoff, A.L. Aluminum from 77° to 300°K,"
J.Appl.Phys. 40:3151-6 (1969). -Cornell U.-
- Johnson, J.N. "Dislocation Dynamics and Steady Plastic Wave Profiles in
Barker, L.M. 6061-T6 Aluminum," J.Appl.Phys. 40:4321-34 (1969).
- Kusubov, A.S. "Dynamic Yield Strength of 2024-T4 Aluminum at 313 kbar,"
van Theil, M. J.Appl.Phys. 40:893-4 (1969). -LRL-
- Kusubov, A.S. "Measurement of Elastic and Plastic Unloading Wave Profiles
van Theil, M. in 2024-T4 Aluminum Alloy,"
J.Appl.Phys. 40:3776-80 (1969). -LRL-

3. Aluminum (cont'd)

- Chang, H.L.
Horie, Y. "An Analysis of Plane Shock-Structures in 6061-T6 Aluminum," North Carolina State U. TR-71-1, AD720716, Feb 1971. (Profiles of Johnson & Barker are compared with finite-difference calculations.)
- Cohen, L.J.
Berkowitz, H.M. "Time-Dependent Fracture Criteria for 6061-T6 Aluminum Under Stress-Wave Loading in Uniaxial Strain," Int.J.Fracture Mech. 7:183-196 (1971).
- Gauster, W.B. "Low-Temperature Grüneisen Parameters for Silicon and Aluminum," Phys.Rev.B 4:1288-96 (1971). -Sandia- (Pulsed electron-beam data; 5 to 290°K.)
- Jones, O.E.
Neilson, F.W.
Benedick, W.B. "Dynamic Yield Behavior of Explosively Loaded Metals Determined by a Quartz Transducer Technique," J.Appl.Phys. 33:3224-32 (1962). (Duraluminum, Armco iron, and steels.)
- Liddell, W.L.
Steele, R.S. "Experimentally-Determined Plastic Wave Velocities in Fully-Annealed 1100F Aluminum (Striker Velocity 89 ft/sec to 788 ft/sec)," N. Carolina State U., Raleigh, TR-70-11, AD717328, 32pp, Dec 1970.
- Naumann, R.J. "High Temperature Equation of State for Aluminum," Marshall Space Flight Center, Ala., NASA TN D-5892, 15pp, Aug 1970. (To 5 Mbar and 25,000 K.)
- Pastine, D.J.
O'Keeffe, D.J. "Theoretical Estimates of Elastic Relief Wave Velocities for Metals with Applications to Al and Cu," J.Appl.Phys. 41:2743 (1970). -NOL-
- Prater, R.F. "Hypervelocity Impact--Material Strength Effects on Crater Formation and Shock Propagation in Three Aluminum Alloys," Air Force Materials Lab. AFML-TR-70-295, AD718461, 315pp, Dec 1970. (Alloys are 1100, 6061, and 7075.)
- Rosenblatt, M. "Numerical Calculations of Hypervelocity Impact Crater Formation in Hard and Soft Aluminum Alloys," Shock Hydrodynamics, Inc., AFML-TR-70-254, AD721468, Feb 1971. (Eulerian 2-D STEEP code calculations for 4 and 7 km/sec Al spheres onto 1100-O and 7075-T6 Al alloys.)
- Stevens, A.L.
Tuler, F.R. "Effect of Shock Precompression on the Dynamic Fracture Strength of 1020 Steel and 6061-T6 Aluminum," J.Appl.Phys. 42:5665-70 (1971). -Sandia-
- Suzuki, T. "Second- and Third-Order Elastic Constants of Aluminum and Lead," Phys.Rev. B 3:4007-14 (1971). -U.Ill.- (Calculations.)

4. Copper

- Lazarus, D. "The Variation of the Adiabatic Elastic Constants of KCl, NaCl, CuZn, Cu, and Al with Pressure to 10,000 Bars," Phys.Rev. 76:545-553 (1949).
- Overton, W.C., Jr. "Temperature Variation of the Elastic Constants of Cubic Elements. I. Copper," Phys.Rev. 98:969-977 (1955).
- Daniels, W.B. "Pressure Derivatives of the Elastic Constants of Copper, Silver, and Gold to 10,000 Bars," Phys.Rev. 111:713-721 (1958).
- Erkman, J.O. "Explosively Induced Nonuniform Oblique Shocks," Phys.Fluids 1:535-540 (1958).
(Method of characteristics calculations for Al and Cu.)
- Erkman, J.O. "Spalling of Aluminum and Copper," Poulter Labs., Stanford Res. Inst. TR 015-59, AD229841, 28pp, Oct 1959.
- Allen, W.A. "Fluid Mechanics of Copper," et al Phys.Fluids 2:329-333 (1959).
- Al'tschuler, L.V. "Equation of State for Aluminum, Copper, and Lead in the High Pressure Region," Soviet Physics-JETP 11:573-579 (1960).
- Al'tschuler, L.V. "The Isentropic Compressibility of Aluminum, Copper, Lead, and Iron at High Pressures," Soviet Physics-JETP 11:766-775 (1960).
- McQueen, R.G. "Ultimate Yield Strength of Copper," Marsh, S.P. J.Appl.Phys. 32:654-665 (1962).
- Prieto, F.E. "Cohesive Energy of Copper," Renero, C. J.Chem.Phys. 43:1050-55 (1965).
(Calculations show volume dependence of Grüneisen parameter to be small.)
- Chang, Y.A. "Temperature Dependence of the Elastic Constants of Cu, Ag, and Au Above Room Temperature," Himmel, L. J.Appl.Phys. 37:3567-72 (1966). -LFL-
- Munson, D.E. "Dynamically Determined Pressure-Volume Relationships for Aluminum, Copper, and Lead," Barker, L.M. J.Appl.Phys. 37:1052-60 (1966). -Sandia-

4. Copper (cont'd)

- Boade, R.R. "Compression of Porous Copper by Shock Waves,"
J.Appl.Phys. 39:5693-5702 (1968). -Sandia-
- Foltz, J.V. "Theoretical Hugoniot Stress-Temperature-Strain
Grace, F.I. States for Aluminum and Copper,"
J.Appl.Phys. 40:4195-9 (1969). -NWL-
- Grace, F.I. "Shock-Wave Strengthening of Copper and Nickel,"
J.Appl.Phys. 40:2649-53 (1969). -NWL-
- Jones, C.E. "Shock-Induced Dynamic Yielding in Copper Single
Mote, J.D. Crystals," J.Appl.Phys. 40:4920-8 (1969). -Sandia-
- O'Keefe, D.J. "Accurate Pressure, Volume, Temperature Relations for
Copper," J.Geophys.Res. 75:1947-52 (1970). -NOL-
- Pastine, D.J. "Theoretical Estimates of Elastic Relief Wave
O'Keefe, D.J. Velocities for Metals with Applications to Al and Cu,"
J.Appl.Phys. 41:2743 (1970). -NOL-
- Boade, R.R. "Principal Hugoniot, Second-Shock Hugoniot, and
Release Behavior of Pressed Copper Powder,"
J.Appl.Phys. 41:4542-51 (1970). -Sandia-
- O'Keefe, D.J. "Theoretical Determination of the Shock States of
Porous Copper," J.Appl Phys. 42:888-9 (1971). -NOL-

5. Iron

- Al'tshuler, L.V.
et al "Dynamic Compressibility and Equation of State of Iron Under High Pressure,"
Soviet Physics-JETP 34:606-614 (1958).
- Erkman, J.O. "Smooth Spalls and the Polymorphism of Iron,"
J.Appl.Phys. 32:939-944 (1961).
- Al'tshuler, L.V. "The Isentropic Compressibility of Aluminum, Copper, Lead, and Iron at High Pressures,"
Soviet Physics-JETP 11:766-775 (1960).
- Ivanov, A.G.
Novikov, S.A. "Rarefaction Shock Waves in Iron and Steel,"
Soviet Physics-JETP 13:1321-3 (1961).
- Jones, O.E.
Neilson, F.W.
Benedick, W.B. "Dynamic Yield Behavior of Explosively Loaded Metals Determined by a Quartz Transducer Technique,"
J.Appl.Phys. 33:324-32 (1962).
(Duraluminum, Armco iron, steels.)
- Gandel'man, G.M. "Quantum-Mechanical Derivation of an Equation of State of Iron," Soviet Physics-JETP 16:94-103 (1963).
- Ivanov, A.G.
Novikov, S.A.
Sinitzyn, V.A. "Investigation of Elastic-Plastic Waves in Explosively Loaded Iron and Steel,"
Soviet Physics-Solid State 5:196-202 (1963).
- Taylor, J.W.
Rice, M.H. "Elastic-Plastic Properties of Iron,"
J.Appl.Phys. 34:364-371 (1963). -LASL-
- Taylor, G.W. "Dislocation Dynamics and Dynamic Yielding,"
J.Appl.Phys. 36:3146-50 (1965).
(Elastic-plastic flow in Armco iron at very high strain rates.)
- Johnson, J.N.
Band, W. "Investigation of Precursor Decay in Iron by the Artificial Viscosity Method," J.Appl.Phys. 38:1578-85 (1967). -WSU-
- Lysne, P.C.
Halpin, W.J. "Shock Compression of Porous Iron in the Region of Incomplete Compaction,"
J.Appl.Phys. 39:5488-95 (1968). -Sandia-
- Butcher, B.M.
Karnes, C.H. "Dynamic Compaction of Porous Iron,"
J.Appl.Phys. 40:2967-76 (1969). -Sandia-
- Naumann, R.J. "Equation of State for Porous Metals Under Strong Shock Compression," J.Appl.Phys. 42:4945-54 (1971).
(Worked out for porous Al, Fe, Cu, Ni, Pb, W.)
- Campbell, J.E.
Foltz, J.V. "Theoretical Hugoniot States of Armco Iron in the Elastic-Plastic Stress Region,"
J.Mech.Phys.Solids 18:427-433 (1970). -NWL-
(Between elastic yield point and 131 kb.)

5. Iron (cont'd)

- Watson, H., Jr. "Longitudinal Wave Propagation Tests and the
Experimental Determination of the Dynamic Stress-
Strain Characteristics of Pure Iron,"
Int.J.Solids Structures 6:1157-72 (1970). -SMU-
- Rotter, C.A. "Ultrasonic Equation of State of Iron. I.
Smith, C.S. Low Pressure, Room Temperature,"
J.Phys.Chem.Solids 27:267-276 (1966). -Case IT-
- Duvall, G.E. "Equations of State in Solids,"
Fowles, G.R. Wash.St.U. WSU-SDL-67-01, AI669251, 132pp, Feb 1967.
Horie, Y. (Liquids; phase changes in iron; quartz.)
- Lord, A.E., Jr. "Elastic Stiffness Coefficients of Iron from 77° to
Beshers, D.N. 673°K," J.Appl.Phys. 36:1620-3 (1965). -Brown U.-
(Single crystals.)

6. Lead

- Naumann, R.J. "Equation of State for Porous Metals Under Strong Shock Compression," J.Appl.Phys. 42:4945-54 (1971).
(Worked out for porous Al, Fe, Cu, Ni, Pb, W.)
- Pack, D.C. "The Propagation of Shock Waves in Steel and Lead,"
Evans, W.M. Proc.Phys.Soc. 60, Part 1:1-8 (1948).
James, H.J.
- Al'tshuler, L.V. "Equation of State for Aluminum, Copper, and Lead
in the High Pressure Region,"
Soviet Physics-JETP 11:573-579 (1960).
- Al'tshuler, L.V. "The Isentropic Compressibility of Aluminum,
Copper, Lead, and Iron at High Pressures,"
Soviet Physics-JETP 11:766-775 (1960).
- Mumson, D.E. "Dynamically Determined Pressure-Volume Relationships
Barker, L.M. for Aluminum, Copper, and Lead,"
J.Appl.Phys. 37:1652-60 (1966). -Sandia-
- Suzuki, T. "Second- and Third-Order Elastic Constants of Aluminum
and Lead," Phys.Rev. B 3:4007-14 (1971). -U.Ill.-
(Calculations.)

7. Steel

- Pack, D.C.
Evans, W.M.
James, H.J. "The Propagation of Shock Waves in Steel and Lead,"
Proc.Phys.Soc. 60, Part 1:1-8 (1948).
- Ivanov, A.G.
Novikov, S.A. "Rarefaction Shock Waves in Iron and Steel,"
Soviet Physics-JETP 13:1321-3 (1961).
- Jones, O.E.
Neilson, F.W.
Benedick, W.B. "Dynamic Yield Behavior of Explosively Loaded Metals
Determined by a Quartz Transducer Technique,"
J.Appl.Phys. 33:5224-32 (1962).
(Duraluminum, Armco iron, steels.)
- Ivanov, A.G.
Novikov, S.A.
Sinitzyn, V.A. "Investigation of Elastic-Plastic Waves in Explosively
Loaded Iron and Steel,"
Soviet Physics-Solid State 5:196-202 (1963).
- Jones, O.E.
Holland, J.R. "Bauschinger Effect in Explosively Loaded Mild Steel,"
J.Appl.Phys. 35:1771-3 (1964).
- Katz, S.
Doran, D.C.
Curren, D.R. "Hugoniot Equation of State of Aluminum and Steel
from Oblique Shock Measurements,"
J.Appl.Phys. 30:568-576 (1959).
(40-180 kbar for Al. Low-carbon steel shows a
phase transition.)
- Stevens, A.L.
Tuler, F.R. "Effect of Shock Precompression on the Dynamic Fracture
Strength of 1020 Steel and 6061-T6 Aluminum,"
J.Appl.Phys. 42:5665-70 (1971). -Sandia-

8. Tantalum

- Soga, N. "Comparison of Measured and Predicted Bulk Moduli of Tantalum and Tungsten at High Temperatures," J. Appl. Phys. 37:3416-20 (1966). -Bell Tel.- (To 500°C.)
- Chechile, R.A. "Ultrasonic Equation of State of Tantalum," Case Inst. Tech., Cleveland (for CNR), AD655640, 24pp, May 1967.
- Rohde, R.W. "Shock-Compression Behavior of Tantalum at 25°C and 900°C," J. Appl. Phys. 42:878-880 (1971).
 Towne, T.L. (Experimental Hugoniot data to 80 kbar.)
- Fateeva, N.S. "Melting Curve of Tantalum Up To 60 kbars," Soviet Physics-Doklady 16:322-3 (1971).
 Vereshchagina, I.F.
- Isbell, W.M. "Measurements of Dynamic Properties of Materials. Volume VI. Tantalum," General Motors Tech. Ctr. MSL-70-23-Vol 6, et al. DASA-2501-6, AF741217, 90pp, Feb 1972.

9. Tungsten

- Boade, R.R. "Dynamic Compression of Porous Tungsten,"
J.Appl.Phys. 40:3781-5 (1969). -Sandia-
- Naumann, R.J. "Equation of State for Porous Metals Under Strong Shock
Compression," J.Appl.Phys. 42:4945-54 (1971).
(Worked out for porous Al, Fe, Cu, Ni, Pb, W.)
- Jones, A.H. "Measurement of the Very-High-Pressure Properties of
Isbell, W.M. Materials Using a Light-Gas Gun,"
Maiden, C.J. J.Appl.Phys. 37:3493-99 (1966). -GMRDL-
(Hugoniot data for Fansteel 77, W, Au to 6 Mbar.)
- Soga, N. "Comparison of Measured and Predicted Bulk Moduli of
Tantalum and Tungsten at High Temperatures,"
J.Appl.Phys. 37:3416-20 (1966). -Bell Tel.-
(To 500°C.)
- Rohde, R.W. "Equation of State of Shock-Loaded Tungsten at 950°C,"
J.Appl.Phys. 40:2988-93 (1969). -Sandia-
- Krupnikov, K.K. "Shock Compression of Porous Tungsten,"
Brazhnik, M.L. Soviet Physics-JETP 15:470-6 (1962).
Krupnikova, V.P. (Experiments to about 4 Mbar.)
- Lowrie, R. "Dynamic Elastic Properties of Polycrystalline Tungsten,
Gonas, A.M. 24⁰-1800°C," J.Appl.Phys. 36:2189-92 (1965).
(Ultrasonic pulse-echo measurements.)

D. Porous Materials

NOLTR 72-274

- Linde, R.K.
Schmidt, D.N. "Shock Propagation in Nonreactive Porous Solids,"
J.Appl.Phys. 37:3259-71 (1966). -SRI-
- Anderson, G.D.
et al "Investigation of Equation of State of Porous Earth Media,"
AFWL-TR-65-146, AD628803, 172pp, Feb 1966.
- Hofmann, R.
Andrews, D.J.
Maxwell, D.E. "Computed Shock Response of Porous Aluminum,"
J.Appl.Phys. 39(10):4555-62 (1968).
- Lysne, P.C.
Halpin, W.J. "Shock Compression of Porous Iron in the Region of
Incomplete Compaction,"
J.Appl.Phys. 39(12):5488-95 (1968). -Sandia-
- Boade, R.R. "Compression of Porous Copper by Shock Waves,"
J.Appl.Phys. 39(12):5693-5702 (1968). -Sandia-
- Herrmann, W. "Equation of State of Crushable Distended Materials,"
Sandia Labs. SC-RR-66-2678, 74pp, Mar 1968.
- Herrmann, W. "Constitutive Equation for the Dynamic Compaction of
Ductile Porous Materials,"
J.Appl.Phys. 40(6):2490-99 (1969). -Sandia-
- Butcher, B.M.
Karnes, C.H. "Dynamic Compaction of Porous Iron,"
J.Appl.Phys. 40(7):2967-76 (1969). -Sandia-

D. Porous Materials (cont'd)

- Lyons, P.C. "Low-Stress Shock and Release Wave Behavior of Porous Carbon," J.Appl.Phys. 41(1):351-360 (1970). -Sandia Labs.- (Below 25 kbar.)
- Pastine, D.J. et al "Theoretical Shock Properties of Porous Aluminum," J.Appl.Phys. 41(7):3144-47 (1970). -NOL-
- Lee, L.M. et al "Some Dynamic Mechanical Properties of Distended Carbons," AIAA J. 8(8):1421-28 (1970). -Sandia Labs.-
- Beade, R.R. "Principal Hugoniot, Second-Shock Hugoniot, and Release Behavior of Pressed Copper Powder," J.Appl.Phys. 41:4542-51 (1970). -Sandia Labs.-
- McQueen, R.G. Carter, W.J. "Equation of State of Low-Density Carbon," IASL LA-4340, AD702446, 6pp, Mar 1970. (Experiments.)
- O'Keefe, D.J. "Theoretical Determination of the Shock States of Porous Copper," J.Appl.Phys. 42:888-9 (1971). -NOL-
- Walsh, J.B. "First Pressure Derivative of Bulk Modulus for Porous Materials," J.Appl.Phys. 42:1098-100 (1971).
- Lyons, P.C. "Determination of High-Pressure Equations of State by Shock-Loading Porous Specimens," J.Appl.Phys. 42:2152-3 (1971).
- Butcher, B.M. "Numerical Techniques for One-Dimensional Rate-Dependent Porous Material Compaction Calculations," Sandia Labs. SC-RR-710112, 61pp, Apr 1971. (Subroutine for WONDY code.)
- Naumann, R.J. "Equation of State for Porous Metals Under Strong Shock Compression," J.Appl.Phys. 42(12):4945-54 (1971). (Worked out for porous Al, Fe, Cu, Ni, Pb, W.)
- Davison, L. "Shock-Wave Structure in Porous Solids," J.Appl.Phys. 42:5503-12 (1971). -Sandia- (Theory of dynamic compression of porous solids.)
- Korner, S.B. Funtikov, A.I. Urlin, V.D. Kolesnikova, A.N. "Dynamic Compression of Porous Metals and the Equation of State with Variable Specific Heat at High Temperatures," Soviet Physics-JETP 15:477-488 (1962).
- Payton, R.G. "Shock-Wave Propagation in Solid and Compactible Media," J.Acoust.Soc.Am. 35:525-534 (1963).

D. Porous Materials (cont'd)

- Boade, R.R. "Shock Compression of Foamed Graphite,"
J.Appl.Phys. 39:1609-17 (1968). -Sandia-
(To 190 kbar.)
- Mader, C.L. "An Equation of State for Shocked Polyurethane Foam,"
Carter, W.J. Los Alamos Sci.Lab. LA-4059, 51pp, Nov 1968.
(Experimental data can be reproduced if foam decomposes
to a BKN equation of state.)
- Krupnikov, K.K. "Shock Compression of Porous Tungsten,"
Brazhnik, M.L. Soviet Physics-JETP 15:470-6 (1962).
Krupnikova, V.P. (Experiments to about 4 Mbar.)
- Carroll, M. "Suggested Modification of the P- α Model for Porous
Holt, A.C. Materials," J.Appl.Phys. 43:759-761 (1972). -LRL-
(Suggests that the pressure is the average matrix pressure
divided by the ratio of specific volumes of the porous
and the matrix material.)
- Harris, P. "The Grüneisen Constant of Porous Materials in Energy
Deposition Experiments,"
Picatinny Arsenal Tech.Rept. 4255, 24pp, Aug 1971.
(Stress relief occurs while the energy is being deposited.)
- Biot, M.A. "Theory of Elasticity and Consolidation for a Porous
Anisotropic Solid," J.Appl.Phys. 26:182-5 (1955).
- Carroll, M. "Static and Dynamic Pore-Collapse Relations for Ductile
Holt, A.C. Porous Materials," J.Appl.Phys. 43:1626-36 (1972).
- Cowin, S.C. "Thermodynamic Model for Porous Materials with Vacuous
Pores," J.Appl.Phys. 43:2495-7 (1972). -Tulane U.-
- Vinh Tuong, M. "Sur la détermination des constantes élastiques des
plaques de matériau composite anisotrope renforcé de
fibres unidirectionnelles,"
Compt.Rend.Acad.Sc.Paris 270A:1440-3 (1970).
- Zimmer, J.E. "Determination of the Elastic Constants of a Unidirectional
Cost, J.R. Fiber Composite Using Ultrasonic Velocity Measurements,"
J.Acoust.Soc.Am. 47:795-803 (1970).
(Glass-reinforced epoxy-fiber composite.)
- Linde, R.K. "Shock Response of Porous Copper, Iron, Tungsten, and
Seaman, L. Polyurethane," J.Appl.Phys. 43:3367-75 (1972).
Schmidt, D.N. (Experiments with light-gas gun.)

E. Non-Metals

1. Miscellaneous Non-Metals

The material names are underlined to make scanning easier.

- Breed, B.R.
Venable, D. "Dynamic Observations of the Course of a Shock-Induced Polymorphic Phase Transition in Antimony," J.Appl.Phys. 39:3222-4 (1968). -IASL-
- Coleburn, N.L.
Forbes, J.W. "Irreversible Transformation of Hexagonal Boron Nitride by Shock Compression," J.Chem.Phys. 48:555-9 (1968).
- Sirdeshmukh, D.B. "The Grüneisen Parameters of Some II-IV Compounds," J.Appl.Phys. 39:349-350 (1968). -Osmania U.- (ZnO, BaO, ZnS, and CdS.)
- Wasley, R.J.
Walker, F.E. "Dynamic Compressive Behavior of a Strain-Rate Sensitive, Polycrystalline, Organic Solid," J.Appl.Phys. 40:2639-48 (1969). -IRL-
- Barker, L.M.
Hollenbach, R.E. "Shock-Wave Studies of PMMA, Fused Silica, and Sapphire," J.Appl.Phys. 41:4208-26 (1970).
- Brody, P.S. "Shock-Induced Transition in Barium Titanate," Harry Diamond Labs. HDL-TR-1476, AD717551, 27pp, Sep 1970.
- Valiev, A.A.
Mikanorov, S.P.
Stepanov, A.V. "Temperature Dependence of the Elastic Constants of Tellurium," Soviet Physics-Solid State 12:1312-16 (1970). (Te apparently consists of spiral chains.)
- Graham, R.A. "Linear Bulk Modulus Approximation for Sapphire," J.Geophys.Res. 76:4908-12 (1971). -Sandia-
- Gibbons, D.F. "Thermal Expansion of Some Crystals with the Diamond Structure," Phys.Rev. 112:136-140 (1958). (Si, Ge, indium antimonide.)
- Morse, G.E.
Lawson, A.W. "The Temperature and Pressure Dependence of the Elastic Constants of Thallium Bromide," J.Phys.Chem.Solids 28:939-950 (1967). (4.2°K to 700°K and to 5 kbar.)

1. Miscellaneous Non-Metals (cont'd)

- Drabble, J.R. "The Third-Order Elastic Constants of Indium
Bremner, A.J. Antimonide," Proc.Phys.Soc. 91:959-964 (1967).
- Perez-Albuerno, E.A. "Effect of High Pressures on the Compressibilities
Drickamer, H.G. of Seven Crystals Having the NaCl or CsCl Structure,"
J.Chem.Phys. 43:1381-7 (1965). -U.Ill.-
(NaCl, KCl, CsCl, MgO, CaO, CaS, TlI.)
- Giardini, A.A. "The Compressibility of Bismuth and Its Upper
Samara, G.A. Transition Pressure," J.Phys.Chem.Solids 26:
1523-8 (1965). -USAEI-
- Jeffery, R.N. "Pressure Calibration to 100 kbar Based on the Compression of NaCl," J.Appl.Phys. 37:3172-80 (1966). -EYU-
et al (Measurements of the Es and Bi transitions used as calibration points in high-pressure work.)
- Blum, F.A., Jr. "Properties of the Group VI B Elements under Pressure.
Deaton, B.C. II. Semiconductor-to-Metal Transition of Tellurium,"
Phys.Rev. 137:A1410-7 (1965).
(Pressures to 60 kbar; temperatures to 600°C.)
- Deaton, B.C. "Properties of Group VI B Elements Under Pressure.
Blum, F.A., Jr. I. Melting Curves of S, Se, and Te,"
Phys.Rev. 137:A1131-8 (1965). (To 45 kbar.)
- McSkimin, H.J. "Elastic Moduli of Diamond as a Function of Pressure
Andreatch, P., Jr. and Temperature," J.Appl.Phys. 43:2944-8 (1972).
(To 20,000 psi at 25°C; -195.8 to 50°C at 1 atm.)
- Ramachandran, V. "Generalized Grüneisen Parameters of Elastic Waves in
Srinivasan, R. Calcite and Its Thermal Expansion,"
J.Phys.Chem.Solids 33:1921-6 (1972). (Theory.)

2. Alkali Halides

- Lazarus, D. "The Variation of the Adiabatic Elastic Constants of KCl, NaCl, CuZn, Cu, and Al with Pressure to 10,000 Bars," *Phys.Rev.* 76:545-553 (1949).
- Al'tshuler, V.L.
et al "Investigation of Alkali-Metal Halides at High Pressures and Temperatures Produced by Shock Compression," *Soviet Physics-Solid State* 5:203-211 (1963).
- Decker, D.L. "Equation of State of NaCl and Its Use as a Pressure Gauge in High-Pressure Research," *J.Appl.Phys.* 36:157-161 (1965). -Brigham Young U.- (Calculations.)
- Decker, D.L. "Equation of State of Sodium Chloride," *J.Appl.Phys.* 37:5012-14 (1966). -Brigham Young U.- (Table to 500 kbar and 0°C to melting point.)
- Bassett, W.A. "Pressure-Induced Phase Transformation in NaCl," *J.Appl.Phys.* 39:319-325 (1968). -SRI-
- Ruppin, R.
Roberts, R.W. "Grüneisen Parameters of the Alkali Halides," *Phys.Rev.* 23:1406-10 (1971). -UNC- (Calculations.)
- Weidner, D.J.
Simmons, G. "Elastic Properties of Alpha Quartz and the Alkali Halides Based on an Interatomic Force Model," *J.Geophys.Res.* 77:826-847 (1972). -MIT-
- Demarest, E.H., Jr. "Extrapolation of Elastic Properties to High Pressure in the Alkali Halides," *J.Geophys.Res.* 77:848-856 (1972).
- Hauver, G.E.
Melani, A. "The Shock Hugoniot of Single-Crystal Lithium Fluoride," *Ballistic Res.Labs.* ERL-MR-2058, AD712320, 18pp, Aug 1970. (160 to 880 kbar; phase transition near 420 kbar.)
- Ghafelehbashi, M.
Dandekar, D.P.
Fuoff, A.L. "Pressure and Temperature Dependence of the Elastic Constants of RbCl, RbBr, and PbI," *J.Appl.Phys.* 41:652-666 (1970). -Cornell U.- (P to 4 kbar; T from 120 to 300°K.)
- Roberts, R.W.
Smith, C.S. "Ultrasonic Parameters in the Born Model of the Sodium and Potassium Halides," *J.Phys.Chem.Solids* 31:619-634 (1970). -CMU-
- Drabble, J.R.
Strathen, P.E.B. "The Third-Order Elastic Constants of Potassium Chloride, Sodium Chloride and Lithium Fluoride," *Proc.Phys.Soc.* 92:1090-5 (1967). -U.Exeter-

2. Alkali Halides (cont'd)

- Miller, R.A.
Smith, C.S. "Pressure Derivatives of the Elastic Constants of LiF and NaF," J.Phys.Chem.Solids 25:1279-92 (1964).
- Ghate, P.B. "Third-Order Elastic Constants of Alkali Halide Crystals," Phys.Rev. 139:A1666-74 (1965).
- Voronov, F.F.
Goncharova, V.A. "Influence of Pressure up to 20 kbar on the Elastic Properties of Rubidium Chloride and Iodide," Soviet Physics-JETP 23:777-784 (1966).
- Lincoln, R.C.
Koliwad, K.M.
Ghate, P.B. "Elastic Constants of Some NaCl Type Alkali Halides," Phys.Stat.Solids 18:265-277 (1966). -Cornell U. (Born model calculations for NaCl, NaBr, KF, KCl, KBr, and RbBr.)
- Koliwad, K.M.
Ghate, P.B.
Ruoff, A.L. "Pressure Derivatives of the Elastic Constants of NaBr and KF," Phys.Stat.Solids 21:507-516 (1967). (Ultrasonic measurements.)
- Bartels, R.A.
Schuele, D.E. "Pressure Derivatives of the Elastic Constants of NaCl and KCl at 295°K and 195°K," J.Phys.Chem.Solids 26:537-549 (1965). -Case I.T.-
- Huntington, H.B. "Ultrasonic Measurements on Single Crystals," Phys.Rev. 72:321-331 (1947). -MIT- (Acoustic velocity and attenuation for Rochelle salt and LiF, NaCl, KBr, and KI.)
- Ruppin, R. "Grüneisen Parameters of the Lithium Halides," J.Phys.Chem.Solids 33:945-9 (1972). (Calculations from lattice dynamics.)
- Achar, B.N.N.
Barsch, G.R. "Thermal Expansion of Rocksalt," Phys.Rev. B 3:4352-60 (1971). (Calculation with 6-parameter shell model.)
- Nanjoshi, K.V.
Mitra, S.S.
Vetelino, J.F. "Simple Shell-Model Calculation of Lattice Dynamics and Thermal Expansion of Alkali Halides," Phys.Rev. B 3:4398-4403 (1971).
- Vetelino, J.F.
Mitra, S.S.
Nanjoshi, K.V. "Lattice Dynamics, Mode Grüneisen Parameters, and Coefficient of Thermal Expansion of CsCl, CsBr, and CsI," Phys.Rev. B 2:2167-75 (1970).

2. Alkali Halides (cont'd)

- Korner, S.B.
et al "Experimental Determination of Temperature in Shock-Compressed NaCl and KCl and of Their Melting Curves at Pressures up to 700 kbar,"
Soviet Physics-JETP 21:689-700 (1965).
- Korner, S.B.
et al "Investigation of the Compressibility of Five Ionic Compounds at Pressures up to 5 Mbar,"
Soviet Physics-JETP 20:811-819 (1965).
(LiF, NaCl, KCl, KBr, and CsBr.)
- Decker, D.L.
Worlton, T.G. "Compression of NaCl and CsCl to 32 kbar,"
J.Appl.Phys. 43:4799-4800 (1972). -ANL-
(Piston apparatus with time-of-flight neutron diffraction technique for measuring the lattice spacings.)
- Spetzler, H.
et al "Equation of State of NaCl: Ultrasonic Measurements to 8 kbar and 800°C and Static Lattice Theory,"
J.Phys.Chem.Solids 33:1727-50 (1972). -Sandia-

3. Carbon

- Beade, R.R. "Shock Compression of Foamed Graphite,"
J.Appl.Phys. 39:1609-17 (1968). -Sandia-
(Densities 0.55-0.68 g/cc; stresses to 190 kbar.)
- Lyane, P.C. "Low-Stress Shock and Release Wave Behavior of Porous
Carbon," J.Appl.Phys. 41:351-360 (1970). -Sandia-
(Below 25 kbar.)
- Lee, L.M. "Some Dynamic Mechanical Properties of Distended Carbons,"
May, R.P. AIAA J. 8:1421-8 (1970). -Sandia-
Guess, T.R. (Includes equation of state to 235 kbar.)
- McQueen, R.G. "Equation of State of Low-Density Carbon,"
Carter, W.J. IASL LA-4340, AD702446, 6pp, Mar 1970. (Experiments.)
- Doran, D.G. "Hugoniot Equation of State of Pyrolytic Graphite to
300 kbars," J.Appl.Phys. 34:844-851 (1963). -SRI-
- Coleburn, N.L. "Compressibility of Pyrolytic Graphite,"
J.Chem.Phys. 40:71-77 (1964). -NOL-
- Zavitsanos, P.D. "The Vaporization of Pyrolytic Graphite,"
GE Space Sci.Lab. R66SD31, Reprint No. 420, 34pp, May 1966.
- Fischbach, D.B. "On the Mechanisms of High-Temperature Plastic Deformation
Kotlensky, W.V. in Pyrolytic Carbons,"
Electrochem. Technology 5:207-213, May-Jun 1967.
- Blakslee, O.L. "Elastic Constants of Compression-Annealed Pyrolytic Graphite,"
et al J.Appl.Phys. 41:3373-82 (1970). -Union Carbide-
- Papadakis, E.P. "Elastic Moduli of Pyrolytic Graphite,"
Bernstein, H. J.Acoust.Soc.Am. 35:521-4 (1963).

4. Germanium

- Graham, R.A.
Jones, C.E.
Holland, J.R. "Shock-Wave Compression of Germanium from 20 to 140 kbar,"
J.Appl.Phys. 36:5955-56 (1965). -Sandia-
- Carr, R.H.
McCammon, R.D.
White, G.K. "Thermal Expansion of Germanium and Silicon at Low Temperatures,"
Phil.Mag. 12:157-163 (1965).
- Graham, R.A.
Jones, O.E.
Holland, J.R. "Physical Behavior of Germanium Under Shock Wave Compression,"
J.Phys.Chem.Solids 27:1519-29 (1966). -Sandia-
- Mason, W.P.
Bateman, T.B. "Ultrasonic-Wave Propagation in Pure Silicon and Germanium,"
J.Acoust.Soc.Am. 36:644-652 (1964). -Bell Tel.-
- McSkimin, H.J. "Elastic Moduli of Single Crystal Germanium as a Function of Hydrostatic Pressure,"
J.Acoust.Soc.Am. 30:314-318 (1958). -Bell Tel.-
(To 50 kpsi; 0-75°C; ultrasonic measurements.)
- Bundy, F.P. "Phase Diagrams of Silicon and Germanium to 200 kbar, 1000°C," J.Chem.Phys. 41:3809-14 (1964).
(Belt apparatus; resistance measured.)

5. Glass

- Gibbons, R.V.
Ahrens, T.J. "Shock Metamorphism of Silicate Glasses,"
J.Geophys.Res. 76:5489-98 (1971).
(Refractive index changes are measured for tektite,
soda-lime, and silica glasses shock loaded to as high
as 460 kbar.)
- Davit, J. "Mechanism for Laser Surface Damage of Glasses,"
J.Appl.Phys. 39:6052-6 (1968). -France-
- Gross, B. "Irradiation Effects in Borosilicate Glass,"
Phys.Rev. 107:368-373 (1957).

6. Oxides

- Wachtman, J.B., Jr. "Exponential Temperature Dependence of Young's Modulus for Several Oxides," Phys.Rev. 122:1754-9 (1961).
(Al_2O_3 , MgO and ThO_2 .)
- Anderson, O.L.
Nafe, J.E. "The Bulk Modulus-Volume Relationship for Oxide Compounds and Related Geophysical Problems," J.Geophys.Res. 70:3951-63 (1965). -Bell Tel.-
- Anderson, O.L. "Derivation of Wachtman's Equation for the Temperature Dependence of Elastic Moduli of Oxide Compounds," Phys.Rev. 144:553-7 (1966). -Bell Tel.-
- White, G.K.
Anderson, O.L. "Grüneisen Parameter of Magnesium Oxide," J.Appl.Phys. 37:430-2 (1966). -Bell Tel.-
- Ahrens, T.J.
Gust, W.H.
Royce, E.B. "Material Strength Effects in the Shock Compression of Alumina," J.Appl.Phys. 39:4610-16 (1968). -SRI-
- Sirdeshmukh, D.B. "The Grüneisen Parameters of Some II-IV Compounds," J.Appl.Phys. 39:349-350 (1968). -Osmania U.-
(ZnO, BaO, ZnS, and CdS.)
- Anderson, D.L.
Anderson, O.L. "The Bulk Modulus-Volume Relationship for Oxides," J.Geophys.Res. 75:3494-3500 (1970). -CIT-
("The relationship: $KV_0 = \text{constant}$ is shown to hold oxides as well as for alkali halides.")
- Spetzler, H. "Equation of State of Polycrystalline and Single-Crystal MgO to 3 kilobars and 800°K," J.Geophys.Res. 75:2073-87 (1970). -CIT-
- Notis, M.R.
Spriggs, R.M.
Hahn, W.C., Jr. "Elastic Moduli of Pressure-Sintered Nickel Oxide," J.Geophys.Res. 76:7052-61 (1971). -Lehigh U.-
(Three techniques: resonant sphere, 3-part composite oscillator, pulse-transmission.)
- Kirby, R.K. "Thermal Expansion of Rutile from 100 to 700°K," J.Res.Nat.Bureau Stds. 71A:363-9 (1967).
(Rutile is TiO_2 . The expansion deviates from the Grüneisen relation; separate optical and acoustical contributions are considered.)
- Simmons, G.
England, A.W. "Universal Equations of State for Oxides and Silicates," Phys.Earth Planet.Interiors 2:69-76 (1969).
(Several equations of state are compared with experimental data; none appear to have general validity.)

6. Oxides (cont'd)

Anderson, O.L.
Andreatch, P., Jr.

"Pressure Derivatives of Elastic Constants of Single-Crystal MgO at 23° and -195.8°C,"
J. Am. Ceramic Soc. 49:404-7 (1966). -Bell Tel.-

7. Polymers

- Zel'dovich, Ia.B.
Kormer, S.B.
Sinitsyn, M.V.
Kuriapin, A.I. "Temperature and Specific Heat of Plexiglas Under Shock Wave Compression,"
Soviet Physics-Doklady 3:938-9 (1958).
- Kellier, D.V.
Trulio, J.G. "Mechanism of Spall in Lucite,"
J.Appl.Phys. 34:172-5 (1963).
- Anderson, G.D.
et al "Equation of State of Solids: Aluminum and Teflon,"
AFWL-TR-65-147, 58pp, Dec 1965.
- Mills, E.J. "Hugoniot Equations of State for Plastics: A Comparison,"
AIAA J. 3:742-3 (1965). -BMI-
- Morgan, L.T.
et al "Measurement of the Grüneisen Parameter and the Internal Energy Dependence of the Solid Equation of State for Aluminum and Teflon," AVCO, AFWL-TR-65-117, 128pp,
AD624320, Oct 1965.
- Pastine, D.J. "P, v, T Equation of State for Polyethylene,"
J.Chem.Phys. 49:3012-22 (1968). -NOL-
- Shen, M.
Hansen, W.N.
Romo, P.C. "Thermal Expansion of the Polyethylene Unit Cell,"
J.Chem.Phys. 51:425-430 (1969).
(10-300°K)
- Asay, J.R.
Lamberson, D.L.
Guenther, A.H. "Pressure and Temperature Dependence of the Acoustic Velocities in Polymethylmethacrylate,"
J.Appl.Phys. 40:1768-83 (1969). -AFWL-
(Ultrasonic pulse-echo technique; 22-75°C; 1 atm and 150 kpsi.)
- Wu, C.K.
Jura, G.
Shen, M. "Grüneisen Parameters of Crystalline Polyethylene,"
J.Appl.Phys. 43:4348-53 (1972).
(Reported values disagree widely. The interrelations between the various definitions and experimental values are clarified.)

7. Polymers (cont'd)

- Wada, Y.
et al "Grüneisen Constant and Thermal Properties of Crystalline and Glassy Polymers," J.Polymer Science, Pt A-2, 7:201-8 (1969). -U.Tokyo-
- Barker, L.M.
Hollenbach, R.E. "Shock-Wave Studies of PMMA, Fused Silica, and Sapphire," J.Appl.Phys. 41:4208-26 (1970). -Sandia-
- Pastine, D.J. "Volume Dependence of the Thermal Expansion of Polymers," J.Appl.Phys. 41:5085-7 (1970).
- Quach, I.
Simha, R. "Pressure-Volume-Temperature Properties and Transitions of Amorphous Polymers: Polystyrene and Poly(orthomethylstyrene)," J.Appl.Phys. 42:4592-4606 (1971). -CWRU- (P from 1-1000 bar; T from 0 to 200°C.)
- Champion, A.R. "Shock Compression of Teflon from 2.5 to 25 kbar-- Evidence for a Shock-Induced Transition," J.Appl.Phys. 42:5665-70 (1971). -Sandia-
- Broadhurst, M.G.
Mopsik, F.I. "Normal Mode Calculation of Grüneisen Thermal Expansion in n-Alkanes," J.Chem.Phys. 54:4239-46 (1971). -NBS-
- Lamberson, D.L.
Asay, J.R.
Guenther, A.H. "Equation of State of Polystyrene and Polymethylmethacrylate from Ultrasonic Measurements at Moderate Pressures," J.Appl.Phys. 43:976-985 (1972). -AFWL- (Hydrostatic pressures to 10 kbar.)
- Munson, D.E.
May, R.P. "Dynamically Determined High-Pressure Compressibilities of Three Epoxy Resin Systems," J.Appl.Phys. 43:962-971 (1972). -Sandia- (1.4 to 188 kbar; linear U_s vs u_p fit is given.)
- Warfield, R.W.
Hartmann, B. "Bulk Modulus of Polyethylene Oxide," Naval Ordnance Laboratory NOLTR 71-208, Jan 1972.
- Barker, R.E., Jr. "Grüneisen Numbers for Polymeric Solids," J.Appl.Phys. 38:4234-42 (1967). -GERDC- (Theoretical.)
- Davies, F.W. "Hugoniot Equation of State of Mylar," Boeing D2-125304-1, AD718398, 12pp, Mar 1969.
- Edwards, D.J.
Erkman, J.O. "The Electromagnetic Velocity Gage and Applications to the Measurement of Particle Velocity in PMMA," Naval Ordnance Lab. NOLTR-70-79, AD717346, 48pp, Jul 1970.

8. Quartz and Silica

- Wackerle, J. "Shock-Wave Compression of Quartz,"
J.Appl.Phys. 33:922-937 (1962). (To 750 k. r.)
- Graham, R.A. "Piezoelectric Current from Shock-Loaded Quartz—
Neilson, F.W. A Submicrosecond Stress Gauge,"
Benedick, W.B. J.Appl.Phys. 36:1775-83 (1965).
(A quartz disk is impacted by another quartz disk.
Stresses up to 50 kbar are measured.)
- Duvall, G.E. "Equations of State in Solids,"
Fowles, G.R. Wash.St.U. WSU-SDL-67-01, AD669251, 132pp, Feb 1967.
Horie, Y. (Liquids; phase changes in iron; quartz.)
- Barker, L.M. "Shock-Wave Studies of PMMA, Fused Silica, and
Hollenbach, R.E. Sapphire," J.Appl.Phys. 41:4208-26 (1970).
- Powell, B.E. "Combinations of Fourth-Order Elastic Constants of
Skove, M.J. Fused Quartz," J.Appl.Phys. 41:4913-17 (1970).
- McSkimin, H.J. "Elastic Moduli of Quartz versus Hydrostatic Pressure
Andreatch, P., Jr. at 25° and -195.8°C," J.Appl.Phys. 36:1624-32 (1965).
Thurston, R.N. (Ultrasonic data; pressures to 30,000 psi.)
- Graham, R.A. "Piezoelectric Current from x-Cut Quartz Subjected to
Ingram, G.E. Short-Duration Shock-Wave Loading,"
J.Appl.Phys. 43:826-835 (1972). -Sandia-
(Shock-induced conductivity can cause spurious
responses for some combinations of stress level and
pulse duration.)
- Fraser, D.B. "Factors Influencing the Acoustic Properties of
Vitreous Silica,"
J.Appl.Phys. 39:5868-78 (1968). -Bell Tel.-
- Julian, C.L. "Calculation of the Elastic Constants of Alpha Quartz
Lane, F.O., Jr. from a Model," J.Appl.Phys. 39:3931-2 (1968). -Sandia-
- Elcombe, M.M. "Some Aspects of the Lattice Dynamics of Quartz,"
Proc.Phys.Soc. 91:947-958 (1967). -Edinburgh U.-
- McWhan, D.B. "Linear Compression of α -Quartz to 150 kbar,"
J.Appl.Phys. 38:347-352 (1967). -Bell Tel.-
(X-ray diffraction pressure vs volume measurements.)
- Weidner, D.J. "Elastic Properties of Alpha Quartz and the Alkali
Simmons, G. Halides Based on an Interatomic Force Model,"
J.Geophys.Res. 77:826-847 (1972). -MIT-

9. Rocks and Soils (before 1967)

- McQueen, R.G. "On the Composition of the Earth's Interior,"
Fritz, J.N. J.Geophys.Res. 69:2947-65 (1964). -LASL-
Marsh, S.P.
- Fugelso, L.E. "Close-In Effects From a Surface Burst,"
AFWL-TR-64-113, 154pp, AD619909, Aug 1965.
(A 2-D elastic-plastic code is developed.)
- Ahrens, T.J. "Stress Relaxation Behind Elastic Shock Waves in Rocks,"
Duvall, G.E. J.Geophys.Res. 71:4349-60 (1966). -SPI-
- Holzer, F. "Calculation of Seismic Source Mechanisms,"
Proc.Roy.Soc.London A290:408-429 (1966).
(One-dimensional computer code calculations of
underground nuclear explosions.)
- Anderson, G.D. "Investigation of Equation of State of Porous Earth Media,"
et al AFWL-TR-65-146, AD628803, 172pp, Feb 1966.
- Butkovich, T.R. "Calculation of the Shock Wave from an Underground Nuclear
Explosion in Granite,"
J.Geophys.Res. 70:885-892 (1965). -IRL-
(New SOC computer code is used.)
- Holzer, F. "Measurements and Calculations of Peak Shock-Wave Parameters
from Underground Nuclear Detonations,"
J.Geophys.Res. 70:893-905 (1965). -IRL-
(Results from several explosions are given. The calculations
use the SOC code.)

9. Rocks and Soils (before 1967, cont'd)

- Simmons, G. "Ultrasonics in Geology," Proc. IEEE 53:1337-45 (1965), 140 refs. (Determining elastic properties of rocks and minerals.)
- Simmons, G. "Velocity of Compressional Waves in Various Minerals at Pressures to 10 Kilobars," J.Geophys.Res. 69:1117-21 (1964).
- Simmons, G. "Velocity of Shear Waves in Rocks to 10 Kilobars, 1," J.Geophys.Res. 69:1123-30 (1964).
- Birch, F. "The Velocity of Compressional Waves in Rocks to 10 Kilobars, Part 2," J.Geophys.Res. 66:2199-2224 (1961), 92 refs.
- Birch, F. "The Velocity of Compressional Waves in Rocks to 10 Kilobars, Part 1," J.Geophys.Res. 65:1083-1102 (1960), 52 refs.
- Birch, F. "Some Geophysical Applications of High-Pressure Research," pp 137-162 of W. Paul & D.M. Warschauer (eds.), Solids Under Pressure (McGraw-Hill, N.Y., 1963).
- Chadwick, P.
Cox, A.D.
Hopkins, H.G. "Mechanics of Deep Underground Explosions," Phil.Trans.Roy.Soc. 256A:235-300 (1964).

9. Rocks and Soils (cont'd; 1967)

McQueen, R.G.
Marsh, S.P.
Fritz, J.N.

"Hugoniot Equation of State of Twelve Rocks,"
J.Geophys.Res. 72(20):4999-5036 (1967). -IASL-

Anon

"Proceedings: DASA Ground Shock Calculation Meeting
(at Rand Corp., Oct 1965)," DASA Info. & Analysis Center,
DASA-1767 Rev., AD659324, 349pp, Sep 1967.

Zaccor, J.V.

"Procedures for Prediction of Ground Shock Phenomena
Based on One-Dimensional Shock Propagation Considerations:
Procedures and Applications," URS Corp., Burlingame,
Calif., URS-668-10, AD664121, 133pp, Apr 1967.

9. Rocks and Soils (cont'd; 1968)

Anderson, D.L. "Shock-Wav. Equations of State for Rocks and Minerals,"
Kanamori, H. J.Geophys.Res. 73(20):6477-6502 (1968). -CIT-

French, B.M. Shock Metamorphism of Natural Materials
Short, N.M. (eds.) (Mono Book Corp., Baltimore, 1968).

Anderson, G.D. "The Equation of State of Ice and Composite Frozen Soil
Material," Stanford Res. Inst., CEREL RP-257, AD674248,
61pp, Jun 1968.

9. Rocks and Soils (cont'd; 1969)

- Ahrens, T.J. "Shock Compression of Feldspars,"
 Petersen, C.F. J.Geophys.Res. 74:2727 (1969). -CIT-
 Rosenberg, J.T. (Oligoclase and microcline to 670 and 580 kbar.)
- Anderson, D.L. "Bulk Modulus-Density Systematics,"
 J.Geophys.Res. 74:3857-63 (1969). -CIT-
- Higgins, G.H. "Response of Rocks to Stress," in H.Mark & S.Fernbach (eds),
 Properties of Matter Under Unusual Conditions
 (Interscience, N.Y., 1969) pp 43-71. -IRL-
- Christensen, D. "ELK 40: Prediction Calculations of Ground Motion for
 Distant Plain, Event 6," Physics Int'l Co., DASA-2471,
 AD707802, 89pp, Dec 1969.
 (ELK code calculations of cratering from 100-ton TNT
 sphere tangent to ground surface.)
- Demmen, R.S. "Shock-Tube-Driven Impact Experiments on Solids,"
 J.Appl.Phys. 40(8):3326-33 (1969). -IITRI-
 (Hugoniot equation of state of granite.)
- Wang, C.-Y. "Equation of State of Periclase and Some of Its Geophysical
 Implications," J.Geophys.Res. 74:1451-7 (1969).
 (Periclase may be a major component of the earth's lower
 mantle. Available ultrasonic and shock-wave data are
 examined; several fits are made to the shock velocity vs
 particle velocity. The present p-density and u-density
 data are adequate for geophysical purposes.)

9. Rocks and Soils (cont'd; 1970)

- | | |
|-------------------|--|
| Peterson, C.F. | "Hugoniot and Release-Adiabatic Measurements for Selected |
| Murri, W.J. | Geologic Materials," J.Geophys.Res. 75(11):2063-72 (1970). |
| Cowperthwaite, M. | (Playa alluvium, tonalite, and novaculite to 50 kbar.) |
| Brace, W.F. | "Static Uniaxial Strain Behavior of 15 Rocks to 30 kbar," |
| | MIT, DASA-2561, AD717368, 43pp, Nov 1970. |
| Akrens, T.J. | "Evaluation of Equation of State Data," |
| Anderson, D.L. | Calif. Inst. Tech., DASA-2359, AD700916, 45pp, Jan 1970. |
| | (Rocks and minerals.) |
| Riney, T.D. | "Stress Wave Effects in Inhomogeneous and Porous Earth |
| Garg, S.K. | Materials," Systems, Science & Software 3SR-267, |
| Kirsch, J.W. | DASA-2498, AD712852, Mar 1970. |

9. Rocks and Soils (cont'd; 1971)

- Ahrens, T.J.
Lower, J.H.
Lagus, P.L.
"Equation of State of Forsterite,"
J.Geophys.Res. 76:518-528 (1971).
(Tungsten-plate impact experiments to 0.37 Mbar.
Forsterite is a magnesium silicate.)
- Ahrens, T.J.
Gaffney, E.S.
"Dynamic Compression of Enstatite,"
J.Geophys.Res. 76:5504-13 (1971). -CIT-
(60 to 480 kilobars.)
- Brace, W.F.
Jones, A.H.
"Comparison of Uniaxial Deformation in Shock and Static
Loading of Three Rocks,"
J.Geophys.Res. 76:4913-21 (1971).
(Granite, tonalite, limestone to about 20 kbar.)
- Davies, G.F.
Anderson, D.L.
"Revised Shock-Wave Equations of State for High-
Pressure Phases of Rocks and Minerals,"
J.Geophys.Res. 76:2617- (1971).
- Gordon, R.B.
"Observation of Crystal Plasticity Under High Pressure
with Applications to the Earth's Mantle,"
J.Geophys.Res. 76:1248-54 (1971).
- Mogi, K.
"Fracture and Flow of Rocks Under High Triaxial
Compression," J.Geophys.Res. 76:1255-69 (1971).
(Experiments with new triaxial apparatus.)
- Morland, L.W.
"Finite Deformation Plasticity Theory with Application
to Geologic Materials," J.Geophys.Res. 76:7062-78 (1971).
- Oberbeck, V.R.
"Laboratory Simulation of Impact Cratering with High
Explosives," J.Geophys.Res. 76:5732-49 (1971).
(2 km/sec Al cylinders and $\frac{1}{2}$ -gram charges are used to
produce craters in quartz sand.)

9. Rocks and Soils (cont'd; 1972)

- Duba, A.
Olinger, B. "Compression of Garnet to 100 Kilobars,"
J.Geophys.Res. 77:2496-9 (1972).
(X-ray measurements.)
- Cook, A.H. "The Dynamical Properties and Internal Structures of
the Earth, the Moon, and the Planets,"
Proc.Roy.Soc.London A328:307-336 (1972).
(Planetary interiors involve properties of materials
under high pressure. This is a review lecture.)

10. Silicon

- Rao, D.V.G.L.N. "Laser-Induced Resistivity Changes in Silicon,"
J.Appl.Phys. 39:4853 (1968). -Maser Optics-
- Oswald, R.B., Jr. "Fracture of Silicon and Germanium Induced by Pulsed
Electron Irradiation,"
IEEE Trans.Nucl.Sci. NS-13:63-69 (1966). -HDL-
- McLean, F.B. "Temperature Dependence of the Dynamic Response of
Oswald, R.B., Jr. Si, Ge, and InSb to a Pulsed Electron Beam,"
Schallhorn, D.R. J.Appl.Phys. 42:3474-78 (1971). -HDL-
Buxton, L.D. (20 to 300°K initial temperature.)
- Gust, W.H. "Axial Yield Strengths and Two Successive Phase Transition
Royce, E.B. Stresses for Crystalline Silicon,"
J.Appl.Phys. 42:1897-1905 (1971).
- Carr, R.H. "Thermal Expansion of Germanium and Silicon at Low Temperatures,"
McCammon, R.D. Phil.Mag. 12:157-163 (1965).
White, G.K.
- Gauster, W.B. "Low-Temperature Grüneisen Parameters for Silicon and
Aluminum," Phys.Rev.B 4:1288-96 (1971). -Sandia-
(Pulsed electron beam data; 5 to 290°K.)
- Mason, W.P. "Ultrasonic-Wave Propagation in Pure Silicon and Germanium,"
Bateman, T.B. J.Acoust.Soc.Am. 36:644-652 (1964). -Bell Tel.-
(Phonon-phonon interaction accounts for the attenuation.)
- Bundy, F.P. "Phase Diagrams of Silicon and Germanium to 200 kbar,
1000°C," J.Chem.Phys. 41:3809-14 (1964).
(Belt apparatus; resistance measured.)

IV. AUTHOR INDEX

* INDICATES A COAUTHOR					
SOURCE	YR	P	AUTHOR	TITLE	AD NO.
EXPME 6	383 66	37	ABBOTT, B.W.	STRESS WAVES IN COMPOSITES (EXPTS)	(IIT)
PHILM 26	489 72	72	ABEL, A.	BAUSCHINGER EFFECT, DISCONTIN YIELDING	
ACADE(BK)	349 65	35	ABRAMOVICI, F.	SEISMIC PULSE, LAYERED SOLID(MCP V.4)	(SSS)
PREVB 3	4352 71	95	ACHAR, B.N.N.	THERMAL EXPANSION OF NaCl	(PSU)
JASA 36	10 64	7	ACHENBACH, J.	APPROX TRANSIENT SOLNS, THERMOELASTICITY	
ZAMP 19	473 68	34*	ACHENBACH, J.	SW IN THIN PRESTRESSED ROD	(NWU)
ASR 19	412 68	37	ACHENBACH, J.	LONGIT FORCE ON IMBEDDED FILAMENT	(NWU)
JAM 35	408 68	35*	ACHENBACH, J.	T-HARM WAVES, STRATIFIED MEDIUM	(NWU)
JAM 35	467 68	35*	ACHENBACH, J.	CONTINUUM THEORY, LAMINATED MEDIUM	(NWU)
JAM 35	689 68	35	ACHENBACH, J.	VIBRATIONS OF LAMINATED BODY	(NWU)
JASA 43	1451 68	35	ACHENBACH, J.	WAVE PROPAG IN COMPOSITES	(NWU)
AIAAJ 6	1832 68	37	ACHENBACH, J.	DISPERSION IN COMPOSITES	(NWU)
PERGA(BK)	337 70	40*	ACHENBACH, J.	WAVE PROPAG IN COMPOSITES (IN WENDT 70)	(NWU)
JGR 71	4349 66	105	AHRENS, T.J.	RELAX BEHIND ELAST SW IN ROCK	(SRI)
JAP 37	4758 66	50	AHRENS, T.J.	IMMERSED-FOIL METHOD	(SRI)
JAP 39	4610 68	100	AHRENS, T.J.	SHOCK COMPRESS, ALUMINA	(SRI)
JGR 74	2727 69	109	AHRENS, T.J.	SHOCK COMPRESSION OF FELDSPARS	(CIT)
DASA	2359 70	110	AHRENS, T.J.	EARTH MTRLS EQN OF STATE	AD700916
UCRL	51109 71	17	AHRENS, T.J.	SHOCK WAVES, METAL VAPORIZATION	(UCRL)
JGR 76	518 71	111	AHRENS, T.J.	EQN STATE OF FORSTERITE	(CIT)
JGR 71	5504 71	111	AHRENS, T.J.	DYNAMIC COMPRESSION, ENSTATITE	(CIT)
JGR 76	5489 71	99*	AHRENS, T.J.	SHOCK METAMORPHISM, SI GL SES	(CIT)
MCGRA(BK)	385 63	52	ALDER, B.J.	PHYSICS WITH HI-P PULSES (IN PAUL)	(LRL)
ACADE BK	63	26	ALDER, B.	METHODS COMPUT PHYSICS, VOL 1	
ACADE BK	65	35	ALDER, B.	METHODS COMPUT PHYSICS, VOL 4	
JPCS 7	58 58	75	ALERS, G.A.	ELAST CONSTS, ZINC, 4.2-670 K	(FORD)
PHYSF 2	329 59	81	ALLEN, W.A.	FLUID MECHANICS OF COPPER	(NCT)
ACADE(BK)	349 65	35*	ALTERMAN, Z.	SEISMIC PULSE, LAYERED SOLID(MCP V.4)	(SSS)
BSSA 58	367 68	35	ALTERMAN, Z.	ELAST WAVES IN LAYERED MEDIA	(NYU)
JETP 34	606 58	83	ALTSHULER, L.	EQN STATE IRON, HIGH P	(USSR)
JETP 34	614 58	74	ALTSHULER, L.	METALS 400-4000 KBAR	(USSR)
JETP 11	573 60	78	ALTSHULER, L.	HI-P EQN STATE AL, CU, PB	(USSR)
JETP 11	766 60	78	ALTSHULER, L.	COMPRESSIBILITY OF AL, CU, PB, FE AT HIGH P	
JETP 15	65 62	73	ALTSHULER, L.	ADIABATS, ISOTHERMS, 7 METALS	(USSR)
USPEK 8	52 65	7	ALTSHULER, L.	SW IN HIGH-P PHYSICS	(USSR)
SOVPHS 5	203 63	94	ALTSHULER, V.	ALKALI HALIDES, SW COMPRESSION	(USSR)
APL 16	113 70	60	ANDERHOLM, N.	LASER-GENERATED STRESS WAVES	(SL)
JAP 43	434 72	41	ANDERHOLM, N.	LASER WAVES IN QUARTZ PHENOLIC	(SL)
JAP 43	1820 72	42	ANDERHOLM, N.	LASER HEATING, COMPOSITES	(SL)
DETSYM 4	205 65	63	ANDERSEN, W.	G FOR METALS	(SHI)
JGR 73	6477 68	108	ANDERSON, D.L.	SW EQNS STATE, ROCKS, MINERALS	(CIT)
JGR 74	3857 69	109	ANDERSON, D.L.	BULK MOD-DENS SYSTEMATICS	(CIT)
DASA	2359 70	110*	ANDERSON, D.L.	EARTH MTRLS EQN OF STATE	AD700916
JGR 75	3494 70	100	ANDERSON, D.L.	BULK MOD-V RELATION, OXIDES	(CIT)
JGR 76	2617 71	111*	ANDERSON, D.L.	SW EQNS STATE, ROCKS, MINS	(CIT)
AFWL TR 65-130	65	73	ANDERSON, G.	SUMMARY-USSR HIGH-P METAL EQN ST	AD621487

AFWL	TR	65-147	65	78	ANDERSON, G.	EQN OF STATE-AL, TEFLON	AD625579
AFWL	TR	65-146	66	89	ANDERSON, G.	EQN OF STATE, POROUS EARTH	AD628803
CRREL	RR	257	68	108	ANDERSON, G.	EQN STATE ICE, FROZEN SOIL	AD674248
WATER	WVT-7133	71	41	ANDERSON, G.	WAVES IN FIBROUS COMPOSITES	AD734295	
JGR	70	3951	65	100	ANDERSON, O.L.	BULK MOD-V RELATION, OXIDES (BELLT)	
JAP	37	430	66	100*	ANDERSON, O.L.	GRUNEISEN PARAMETER OF MGO (BELLT)	
JACS	49	404	66	101	ANDERSON, O.L.	P DERIVS, ELAST CONSTS OF MGO (BELLT)	
JPCS	27	547	66	65	ANDERSON, O.L.	ULTRASONIC MEASUREMENTS (BELLT)	
PHYSR144	553	66	100	ANDERSON, O.L.	T DEPENDENCE, ELAST MODULI OXIDES (BELLT)		
PEPI	1	169	68	67	ANDERSON, O.L.	ESTIMATING HIGH-P COMPRESSION	
JGR	72	6754	67	66	ANDERSON, O.L.	COPRESP STATES-A RESTRICTION (LGO)	
JGR	73	5187	68	67	ANDERSON, O.L.	V DEPENDENCE OF G (USGS)	
JGR	74	981	69	68*	ANDERSON, O.L.	HIGH-T EQN STATE OF SOLIDS (LAMON)	
JGR	75	2719	70	69	ANDERSON, O.L.	P DERIVS, EQNS STATE	
JGR	75	3494	70	100*	ANDERSON, O.L.	BULK MOD-V RELATION, OXIDES (CIT)	
JGR	76	1349	71	70	ANDERSON, O.L.	CENTRAL FORCE MODEL FOR CUBICS (LAMON)	
SCL	DR	68-123	69	23*	ANDERSON, P.D.	AN EQN OF STATE HANDBOOK (SL)	
JAP	43	1820	72	42*	ANDERSON, P.D.	LASER HEATING, COMPOSITES	
AOPT	5	167	66	54	ANDERSON, W.	E-BEAM EXCITATION, LASER CRYSTALS (STANU)	
JASA	34	609	62	48*	ANDREATCH, P.	ULTRASONIC PULSE METHOD (BELLT)	
JAP	36	1624	65	104*	ANDREATCH, P.	ELASTIC MODULI, QUARTZ (BELLT)	
JACS	49	404	66	101*	ANDREATCH, P.	P DERIVS, ELAST CONSTS OF MGO (BELLT)	
JASA	41	1052	67	48*	ANDREATCH, P.	ULTRASONIC WAVE MEASUREMENTS (BELLT)	
JAP	43	2944	72	93*	ANDREATCH, P.	ELASTIC MODULI, DIAMOND	
JAP	39	4555	68	77*	ANDREWS, D.J.	SHOCK COMPRESS, POROUS AL (CALC) (PIC)	
JCP	7	310	71	70	ANDREWS, D.J.	CALC, MIXED PHASES, CONTINUUM MECH (WSU)	
JAM	34	751	67	36	ANFINSEN, L.E.	LAYERED STRESS WAVE ATTENUATORS (IITRI)	
AFWL	TR	65-115	65	29	ANG, A.H.	GROUND MOTION, NUCLEAR BURST AD475498	
JCP	3	226	68	12*	ANG, A.H.	EULERIAN MODEL, SPH SYM	
JASA	27	310	55	35*	ANGONA, F.A.	ELASTIC WAVES IN LAMINATES	
JETPL	15	172	72	60	APOLLONOV, V.	THERMOELASTIC BULGE, LASER ON QUARTZ (USSR)	
JAP	41	4902	70	69	APPLEBY, E.J.	ROLE OF CONSTITUTIVE EQNS (USS)	
AMR	31	17	64	33	ARENZ, R.J.	WAVES IN VISCOELASTIC SOLIDS (CIT)	
JAP	38	4086	67	79	ASAY, J.R.	ULTRASONICS, 1060, 6061-T6 AL (AFWL)	
JAP	40	1768	69	102	ASAY, J.R.	SOUND SPEED VS P, T IN PMMA (AFWL)	
JAP	43	976	72	103*	ASAY, J.R.	EQN STATE, POLYSTYRENE, PMMA (AFWL)	
CPHYS	7	174	66	47	AUSTIN, I.G.	SOLIDS UNDER VERY HIGH P (USHEF)	
RMP	35	400	63	64	BABB, S.E.	SIMON EQN PARAMS, P VS MELT TEMP (UOKLA)	
JAP	35	2524	64	63	BACKMAN, M.E.	STRESS-STRAIN, IMPULSIVE LOADING (NOTS)	
WILEY	8K	65	54	BAKISH, R.	E, ION-BEAM TECHNOLOGY		
SCL	DR	68-123	69	23	BAKKEN, L.H.	AN EQN OF STATE HANDBOOK (SL)	
CALUB	69	13*	BALABAN, M.M.	ACCEL WAVES IN E/P MTRLS AD695960			
RSI	35	937	64	50	BALCHAN, A.S.	ACCEL FLAT PLATES TO HIGH VELOCITY (DUPON)	
PREV	59	588	41	31	BANCROFT, D.	LONGIT WAVE VELOC IN BARS (HARVU)	
JGR	65	695	60	5	BAND, W.	SW PROPAG IN SOLIDS (WSU)	
JAP	38	1578	67	27*	BAND, W.	Q-CODE CALCS, PRECURSOR IN IRON (WSU)	
JAP	39	4024	68	67	BANSIGIR, K.	EVALUATION OF GRUNEISEN CONSTANT (INDIA)	
JAP	35	1203	64	78	BARKER, L.M.	DYNAMIC RESPONSE OF AL (SC)	
RSI	36	1617	65	50	BARKER, L.M.	INTERFEROMETER PROPERTY MEASUREMENT (SL)	
JAP	37	1652	66	78*	BARKER, L.M.	P-V FOR AL, CU, PB (SC)	
JAP	37	1989	66	78	BARKER, L.M.	YIELD POINT PHENOMENON, 1060 AL (SC)	
JAP	40	4321	69	79*	BARKER, L.M.	WAVE PROFILES, 6061-T6 AL (SL)	

SC	RR-69-233	69	27	BARKER, L.M.	SWAP-9 STRESS WAVE PROGRAM	(SL)
JAP	41	4208	70	92 BARKER, L.M.	SW STUDIES, PMMA, SAPPHIRE	(SL)
JCM	5	140	71	36 BARKER, L.M.	STRESS WAVE MODEL, COMPOSITES	(SL)
JAP	43	4669	72	51 BARKER, L.M.	LASER INTERFEROMETER FOR MEAS VELOC	(SL)
EMECH	12	209	72	50 BARKER, L.M.	LASER INTERFEROMETRY IN SW RESEARCH	(SL)
JAP	38	4234	67	103 BARKER, R.E.	G FOR POLYMERIC SOLIDS	(GERDC)
JCP	53	2616	70	69 BARKER, R.E.	G FROM THERMAL COND MEAS+P	(UVIRG)
SC	RR-69-656	70	27	BARR, G.W.	MAT2D-STRUCTURAL RESPONSE CODE	(SL)
AFIT	PH/71-1	71	22	BARRETT, W.H.	PUFF 66-MIXED PHASE EQN STATE	AD726992
PHILM	46	720	55	62 BARRON, T.H.	THERMAL EXPANSION AT LOW TEMP	(OXFOR)
ANNPH	1	77	57	62 BARRON, T.H.	GRUNEISEN PARAMS FOR SOLIDS	(CANAD)
PSS	19	129	67	66 BARSCH, G.R.	P DERIVS, ELAST CONSTS, CUBIC SYMMETRY	(PSU)
PSS	19	139	67	66 BARSCH, G.R.	P DERIVS, ELAST CONSTS, CUBIC MTRLS	(PSU)
JAP	39	3276	68	67 BARSCH, G.R.	HIGH-ORDER ELAST CONSTS UNDER P	(PSU)
PREVB	3	4352	71	95*BARSCH, G.R.	THERMAL EXPANSION OF NaCl	(PSU)
JPCS	26	537	65	95 BARTELS, R.A.	P DERIVS, ELAST CONSTS, NaCl, KCl	(CIT)
NSE	48	159	72	56 BARTINE, D.E.	MEV ELECTRON TRANSP, DISCR ORD	(ORNL)
JAP	39	319	68	94 BASSETT, W.A.	P-INDUCED PHASE CHANGE IN NaCl	(UROCH)
CAMBR	BK	64	56	3 BATCHELOR, G.	SURVEYS IN MECHANICS	
CAMBR	BK		58	31 BATCHELOR, G.	(ED) SCI PAPERS OF G.I. TAYLOR	
JASA	36	644	64	98*BATEMAN, T.B.	ULTRASONIC WAVES IN Si, Ge	(BELL)
JGR	71	2601	66	9*BECKETT, C.W.	SHOCK PROPAG IN CUBIC LATTICE	(NBS)
JAP	40	4776	69	60 BEDAIR, S.M.	CLEAN SURFACES BY LASER IRRAD	(UCALB)
JAM	37	1190	70	39 BEDFORD, A.	WAVES, FIBER-REINF MTRLS	(UTEXA)
JAM	38	8	71	40 BEDFORD, A.	DIFFUSING CONTINUUM THEORY	(UTEXA)
JASA	42	378	67	35 BEHRENS, E.	SOUND IN LAMELLAR COMPOSITES	
IJES	6	209	68	37 BEN-AMOR, M.	CONTINUUM APPROACH, COMPOSITES	(GE)
JAP	42	5422	71	40 BEN-AMOR, M.	FINITE WAVES IN 1D COMPOSITES	(GE)
PREV	114	467	59	61 BENEDEK, G.B.	SOLID ENERGY FROM SW DATA	(HARVU)
JAP	33	3224	62	50*BENEDICK, W.B.	DYNAMIC YIELD, QUARTZ GAGE	(SC)
JAP	36	1775	65	50*BENEDICK, W.B.	QUARTZ SUBMICROSECOND STRESS GAGE	(SL)
SC	RR 68-	41	63	24*BENZLEY, S.E.	TOODY II-CODE, 2D WAVE PROPAG	(SL)
SC	DR-68-885	68		73*BENZLEY, S.E.	DYNAMIC MTRL PROPERTY LIBRARY	(SL)
SC	DR-69-516	69		24 BENZLEY, S.E.	TOODY II-A. 2D STRESS WAVE PROGRAM	(SL)
JGR	76	1370	71	70*BERESNEV, B.I.	PLASTICITY RESULTING FROM PRESSURE	(USSR)
CREND249		2506	59	62 BERGER, J.	GRUNEISEN PARAMETER	(FRANC)
ACADE(BK)		135	63	54 BERGER, M.J.	MONTE CARLO, CHARGE: PARTICLES (IN ALDER)	
IJFM	7	183	71	80*BERKOWITZ, H.	T-DEP FRACTURE CRITERIA, 6061-T6 AL (MCDON)	
JASA	35	521	63	97*BERNSTEIN, H.	ELAST MODULI, PYROLYTIC GRAPHITE	(MANLA)
GRES	CR 0484-1	68		11 BERT, C.W.	STRONG WAVES IN ELASTIC MTRLS	AD680236
JAM	34	725	67	34 BERTHOLF, L.	2D ELASTIC WAVE PROPAG IN BARS	(SL)
SC	RR 68	41	68	24 BERTHOLF, L.	TOODY II-CODE, 2D WAVE PROPAG	(SL)
SC	DR-69-516	69		24*BERTHOLF, L.	TOODY II-A. 2D STRESS WAVE PROGRAM	(SL)
JAM	36	533	69	34 BERTHOLF, L.	E/P WAVES, 6061-T6 AL BARS	(SL)
SC	RR-69-596	70		15 BERTHOLF, L.	CALCS, ATTENUATION OF TRIANGULAR PULSE	(SL)
JAP	36	1620	65	84*BESHES, D.N.	ELAST COEFFS, IRON, T=77-673 K	(BRON)
DASA		2404	70	45*BHAUMIK, A.K.	SPH WAVES IN INELASTIC MTRLS	AD703295
JAP	26	182	55	91 BIOT, M.A.	THEORY, POROUS ANISOTROPIC SOLID	(SHELL)
JASA	28	168	56	42 BIOT, M.A.	ELAST WAVES, POROUS SOLID.I.	(SHELL)
JASA	26	179	56	42 BIOT, M.A.	ELAST WAVES, POROUS SOLID.II.	(SHELL)
JAP	38	279	38	62 BIRCH, F.	P EFFECT, ELASTIC PARAMS, ISOTROPIC	(HARVU)
PREV	71	809	47	62 BIRCH, F.	FINITE STRAIN, CUBIC CRYSTALS	(HARVU)
JGR	65	1083	60	106 BIRCH, F.	COMP WAVE VELOC, ROCKS, 10 KBAR.1.	(HARVU)
JGR	66	2199	61	106 BIRCH, F.	COMP WAVE VELOC, ROCKS, 10 KBAR.2.	(HARVU)

MCGRA (PK)	137	63	106	BIRCH, F.	GEOPHYS APPLICS, HI-P RES (IN PAUL)	(HARVU)
GSA (BK)	97	66	74	BIRCH, F.	COMPRESSIBILITY (IN HBK PHYS CONSTS)	
HDP	34	53	56	BIRKHOFF, R.D	PASSAGE FAST ELECTRONS IN MATTER	(ORNL)
BJAP	18	703	67	54 BISHOP, H.E.	5-40 KEV SCATTER, THICK TARGETS	(UCAMB)
AIAAJ	8	2147	70	28*BJORK, R.L.	SHAPE CALCS, IMPACT, LAMINATE	(SHI)
PHILM	3	831	58	62 BLACKMAN, M.	NEGATIVE VOL EXPANSION COEFFS	(IMPER)
JASA	24	211	52	45 BLAKE, F.G.	SPH WAVES IN SOLIDS	(CRC)
JAP	41	3373	70	97 BLAKSLEE, O.L	ELAST CONSTS, PYROLYTIC GRAPHITE	(UC)
JHPS	12	245	64	45 BLAND, D.R.	DILATATIONAL WAVES AND SHOCKS	(UMANC)
JIMA	1	56	65	7 BLAND, D.R.	SHOCK STRUCTURE IN A SOLID	(UMANC)
PREV	137	A1131	65	93*BLUM, F.A.	MELT CURVES OF S, SE, TE TO 45 KBAR	(GD)
PREV	137	A1410	65	93 BLUM, F.A.	TELLURIUM METAL TRANSIONS	(GD)
JAP	39	1609	68	91 BOADE, R.R.	SW COMPRESS, FOAMED GRAPHITE	(SL)
JAP	39	5693	68	82 BOADE, R.R.	SHOCK COMPRESS, POROUS COPPER	(SL)
JAP	40	3786	69	51*BOADE, R.R.	RELEASE ADIABAT EXPTS	(SL)
JAP	40	3781	69	88 BOADE, R.R.	COMPRESSION OF POROUS TUNGSTEN	(SL)
JAP	41	4542	70	82 BOADE, R.R.	HUGONIOT, PRESSED CU POWDER	(SL)
JAP	43	434	72	41*BOADE, R.R.	LASER WAVES IN QUARTZ PHENOLIC	(SL)
DOKLA	14	65	69	68 BOBROVSKII, S	SHOCK ADIABATS OF SOLIDS	(USSR)
JAM	33	248	66	33*BODNER, S.R.	E/P PULSE IN A BAR	(BROWN)
JAM	35	489	68	12 BOLEY, B.A.	PROPAG OF DISCONTINUITIES	(COLUM)
JPCS	33	1838	72	75*BOLSAITIS, P.	EQU STATE, NOBLE METALS	(UMD)
ARMA	22	79	66	65*BOWEN, R.M.	TD OF NON-LIN MTRLS	(LSU)
CJP	37	1017	59	3 BOWSER, J.M.	PLASTIC WAVES IN SOLIDS	
JGR	65	741	60	49 BOYD, F.R.	APPARATUS-PHASE EQU MEASUREMENTS	(CARNE)
DASA		2561	70	110 BRACE, W.F.	15 ROCKS TO 30 KBAR	(MIT) AD717368
JGR	76	4913	71	111 BRACE, W.F.	SHOCK, STATIC LOADING OF 3 ROCKS	
ACADE	BK		63	5 BRADLEY, R.S.	HIGH-P PHYSICS AND CHEMISTRY	
PPS	91	959	67	93*BRAMMER, A.J.	3RD ORDER CONSTS, IN ANTIMONIDE	(UEXET)
USPEK	14	438	72	72 BRANDT, N.B.	P EFFECT ON METAL FERMI SURFACE	(USSR)
JETP	34	614	58	74*BRAZHNİK, M.	METALS 400-4000 KBAR	(USSR)
JETP	15	470	62	88*BRAZHNİK, M.	SHOCK COMPRESSION, POROUS TUNGSTEN	(USSR)
JAP	38	3271	67	42 BREED, B.R.	DETERMINING DYNAMIC TENSILE PROPS	(LASL)
JAP	39	3222	68	92 BREED, B.R.	SHOCK INDUCED TRANSITION-ANTIMONY	(LASL)
JASA	27	550	55	32*BRENNAN, J.N.	ULTRASONIC DISPERSION IN RODS	(PENSU)
RCREV	37	392	68	11*BREUSOV, O.M.	STRONG SW EFFECTS ON SOLIDS	(USSR)
DOVER	BK		31	47 BRIDGMAN, P.W	PHYSICS OF HIGH PRESSURE	
JCP	54	4239	71	103 BROADHURST, M	G CALC FOR N-ALKANES	(NBS)
HDL	TR	1476	70	92 BRODY, P.S.	SW-INDUCED TRANSITION, BaTiO3	AD717551
JEM	4	1	70	34 BROER, L.J.F.	LONGIT MOTION OF AN ELASTIC BAR	
EXPME	6	383	66	37*BROUTMAN, L.	STRESS WAVES IN COMPOSITES (EXPTS)	(IIT)
JAP	42	4160	71	75*BROWN, N.	PHASE TRANSITIONS, FE-MN ALLOYS	(UPENN)
JAM	10	A111	43	31 BRUCKNER, R.E	GRAPHICAL ANALYSIS-ELAST BAR IMPACT	
PHYSR	157	524	67	66 BRUGGER, K.	GRUNEISEN GAMMA FROM ELAST DATA	(BELL)
JAP	37	2283	66	59 BULLOUGH, R.	ELASTIC EXPLOS IN SOLIDS	
SSF	13	81	62	47 BUNDY, F.P.	METALS AT HIGH T, P	(GE)
JCP	41	3809	64	113 BUNDY, F.P.	SI, GE PHASE DIAGRAMS TO 200 KBAR	(GE)
NCSU	TR	70-1	70	15 BURNISTON, E.	1D SOLNS, NON-LIN EP WAVES	AD699921
DIT	TR	125-11	67	26 BURNS, B.P.	MC DIT 1 CODE, CHARAC METH	(DIT)
JAP	38	553	67	10*BURNS, B.P.	LATE-STAGE EQUIV, 1D IMPACTS	(DIT)
JAP	39	5541	68	59 BUSHNELL, J.	LASER-INDUCED STRESS WAVES	
AIAAJ	2	977	64	43 BUTCHER, B.M.	TIME-DEPEND SPALL IN METALS	(SC)
DETSYM	4	295	65	7 BUTCHER, B.M.	EP WAVE PROPAGATION	(SC)

SC	RR	65-208	66	27 BUTCHER,B.M.	SRATE CODE WITH STRAIN RATE EFFECTS	(SC)
JAP	37	402	66	9 BUTCHER,B.M.	STRAIN-RATE EFFECTS IN METALS	(SC)
JAP	37	1989	66	78*BUTCHER,B.M.	YIELD POINT PHENOMENON, 1060 AL	(SC)
IJFM	4	431	68	44*BUTCHER,B.M.	TIME-DEP OF DYNAM FRACTURE	(SL)
JAP	40	2967	69	83 BUTCHER,B.M.	DYNAMIC COMPACTION OF POROUS IRON	(SC)
SC	RR-710112	71	23 BUTCHER,B.M.	WONDY-1D POROUS MTRL CALCS	(SC)	
JGR	70	885	65	25 BUTKOVICH,T.	CALC-UG EXPLOS IN GRANITE	(LRL)
IEEE NS-	242	69	55*BUXTON,L.D.	E-BEAM DEPTH-DOSE PROFILES	(HDL)	
HDL	TR	1536	71	55 BUXTON,L.D.	ZEBRA-1 E-DEPOSITION CODE	(HDL)
JAP	42	3463	71	57*BUXTON,L.D.	1D RESPONSE TO E-BEAM PULSE	(HDL)
JAP	42	3474	71	57*BUXTON,L.D.	TEMP-DEPENDENCE,SI,GE,INSB,E-BEAM	(HDL)
ACADE(BK)		70	16 CABLE,A.J.	HYPVEL ACCELERATORS (IN KINSLOW)		
PHYSR	98	969	55	62*CAFFNEY,J.	T VAR,ELAST CONSTS,CUBIC CRYSTS	(NRL)
ACADE BK		71	18 CALDIROLA,P.	PHYSICS OF HIGH ENERGY DENSITY (ISP 48)		
JAMPS	1	113	53	32 CAMPBELL,J.D	PLASTIC BEHAV OF METAL RODS	(UOXFO)
JMPS	18	427	70	83 CAMPBELL,J.E	THEO E/P EQNS STATE, ARMCO IRON	(NWL)
URDC		66	28 CANNON,E.T.	LOW-VELOCITY PENETRATION	AD646457	
PHILM	12	157	65	98 CARR,R.H.	GE,SI THERMAL EXPAN AT LOW TEMP	(AUSTR)
JAP	43	759	72	91 CARROLL,M.	MODIFIED P-ALPHA FOR COMPOSITES	(LRL)
JAP	43	1626	72	91 CARROLL,M.M.	PORE-COLLAPSE RELATIONS	(LLL)
LASL LA	4059	68	91*CARTER,W.J.	EQN STATE,SHOCKED POLYURETHANE FOAM		
ACADE(BK)	243	70	74*CARTER,W.J.	EQN OF STATE FROM SW WORK (IN KINSLOW)		
LASL LA	4340	70	90*CARTER,W.J.	LOW-DENSITY CARBON	AD702446	
JAP	31	1377	60	52 CASSITY,C.R.	STRESS WAVES IN SOLIDS	
JMPS	10	99	62	33 CHADWICK,P.	THERMOELASTIC DISTURBANCE	(USHEF)
QJMAM	15	349	62	46 CHADWICK,P.	SPH E-P WAVES FROM CAVITY	(SHEFU)
PTRS 256A	235	64	106 CHADWICK,P.	DEEP UNDERGROUND EXPLOSIONS	(USHEF)	
JAM	26	528	59	37*CHAKRAVORTY	SW PROPAG, NONHOM ELAST MEDIA	(BROWN)
JAP	42	5665	71	103 CHAMPION,A.	TEFLON 2.5 TO 25 KBAR	(SL)
JAP	43	3362	72	19 CHANG,H.C.	SHOCK STRUCTURE IN 606-T6 AL	(NCSU)
NCSU TR	71-1	71	80 CHANG,H.L.	PLANE SW STRUCT, 6061-T6 AL	AD720716	
NCSU TR	70-1	70	15*CHANG,T.S.	1D SOLNS, NONLIN EP WAVES	AD699921	
JAP	37	3567	66	75 CHANG,Y.A.	T DEPEND,ELAST CONSTS CU,AG,AU	(LRL)
PSS	19	139	67	66*CHANG,Z.P.	P DERIVS,ELAST CONSTS, CUBIC MTRLS	(PSU)
JAP	39	3276	68	67*CHANG,Z.P.	HIGH-ORDER ELAST CONSTS UNDER P	(PSU)
CASE TR	10	67	87 CHECHILE,R.	ULTRASONIC EQN OF STATE OF TA	AD655640	
IJSS	7	5	71	17 CHEN,P.J.	GROWTH OF 1D SHOCK WAVES	(SL)
ARMA	17	350	71	17 CHEN,P.J.	1D SHOCK WAVES IN NONCONDUCTORS	(SL)
JCP	53	2616	70	69*CHEN,R.Y.S.	G FROM THERMAL COND MEAS+P	(UVIRG)
IEEE NS-	250	69	55*CHILDERS,F.K	PULSED E-BEAM DEPOSITION		
JGR	71	5911	66	44 CHILTON,F.	SPALL FROM U/G EXPLOSION	
PREVB	5	2826	72	72 CHING,H.MA	IDEALIZED DYNAMIC STRESS-STRAIN CURVE	
JAP	38	553	67	10 CHOU,P.C.	LATE-STAGE EQUIV,1D IMPACTS	(DIT)
JAM	34	745	67	10 CHOU,P.C.	1D ELAST WAVES BY CHARACTERISTICS	(DIT)
AFML TR	67-427	68	38 CHOU,P.C.	INTRO-WAVE PROPAG,COMPOSITE MTRL	AD672269	
JCM	3	500	69	38*CHOU,P.C.	HUGONOT OF COMPOSITES	(DREXE)
BRL CR	36	71	25*CHOU,P.C.	MCDIT-3 CHARACTERISTICS CODE	AD724734	
AIAAJ	7	1710	69	13 CHOU,S.C.	STRESS-WAVE PROPAG, NONHOM MEDIA	(AMMRC)
CPST	14	250	00	31 CHREE,C.	EQNS OF ISOTROPIC ELASTIC SOLID	
JAP	38	5395	67	79*CHRISTENSEN	ATTEN OF SHOCK WAVES IN AL	(SRI)
DASA	2471	69	25 CHRISTENSEN	ELK 40-CALC 100-TON,SURF (PI)	AD707802	
PHYSR	97	1544	55	73*CHRISTIAN,R.	EQN STATE METALS,SW MEASUREMENTS	(LASL)
DASA	2419	70	43*CHRISTMAN,D.	SW PROPAG,FRACTURE IN 6061-T6 AL	AD705536	

NOLTR 72-274

DASA	2511	70	2	CHRISTMAN,D.	BIB-DYNAMIC MTRL PROPS	(GMTC)	AD710823
JAP	42	4160	71	75	CHRISTOU,A.	PHASE TRANSITIONS, FE-MN ALLOYS	(UPENN)
JMPS	12	45	64	8	CHU,B.T.	FINITE AMPL WAVES, INCOMPRESSIB MTRL	(YALE)
ASTMP	47	502	47	31*	CLARK,D.S.	EXPTS-PLASTIC DEFORM, IMPACT	(CIT)
SC	DR-69-516	69	24*	CLARK,G.E.	TOODY II-A. 2D STRESS WAVE PROGRAM	(SL)	
GSA	BK	66	74	CLARK,S.P.	HBK OF PHYSICAL CONSTANTS	(YALE)	
JAM	33	248	66	33	CLIFTON,R.J.	E/P PULSE IN A BAR	(BROWN)
QAM	25	97	67	10	CLIFTON,R.J.	DIFFCE METH,DYNAMIC ELASTICITY	(BROWN)
BRL	CR	9	68	11	CLIFTON,R.J.	E-P BDY IN 1-D WAVE PROPAGATION	AD674755
IJFM	7	183	71	44	COHEN,L.J.	T-DEP FRACTURE CRITERIA, 6061-T6 AL	(MCDON)
JCP	40	71	64	97	COLEBURN,N.	PYROLYTIC GRAPHITE	(NOL)
JASA	47	269	70	74	COLEBURN,N.	BULK MODULI OF SEVERAL SOLIDS	(NOL)
JCP	48	555	68	92	COLEBURN,N.	BORON TRINITRIDE TRANSFORMATION BY SHOCK	
JAP	40	4624	69	75	COLEBURN,N.	T EFFECT ON SW IN CU-ZN	(NOL)
ARMA	13	167	63	64	COLEMAN,B.D.	TD OF MTRLS WITH HEAT COND, VISC	(MELLO)
ARMA	19	1-	65	8	COLEMAN,B.D.	WAVES IN MTRLS WITH MEMORY. I-IV	(MELLO)
PRS	A292	562	66	65	COLEMAN,B.D.	TD, 1D SW IN MTRLS WITH MEMORY	(MELLO)
PRS	306	449	67	67	COLEMAN,B.D.	SYMMETRY IN CONSTITUTIVE EQNS	AD680101
QJMAM	19	259	66	9	COLLINS,W.D.	1D NONLIN WAVES, INCOMPRESSIBLE	(USTRA)
QJMAM	20	429	67	10	COLLINS,W.D.	1D NON-LIN WAVES, INCOMPRESSIBLE	(USTRA)
PRS	A328	301	72	112	COOK,A.H.	INTERNAL STRUCT, PLANETS, EARTH	
JASA	29	445	57	61	COOK,A.H.	ELAST CONSTS VS P-CALC FROM ULTRASO	(BELL)
BJAP	15	883	64	55	COSSLETT,V	5-30 KEV RANGE-ENERGY. I.	(UCAMB)
BJAP	15	1283	64	55	COSSLETT,V	5-30 KEV RANGE-ENERGY. II.	(UCAMB)
JASA	47	795	70	91*	COST,J.R.	ELAST CONSTS, ULTRASONICS, UNIDIR FIBERS	
IIT	TR 68-181	68	29	COSTANTINO,C	SLAM CODE. STRESS WAVES		AD840134
IIT	TR 68-181	68	29	COSTANTINO,C	SLAM CODE. I. APP		AD840135
IIT	TR 68-181	68	29	COSTANTINO,C	SLAM CODE. II. PROGRAM		AD840136
JCP	4	147	69	13	COSTANTINO,C	2D WAVE PROPAG, NONLIN MEDIA	(CCNY)
RSI	35	937	64	50*	COWAN,G.R.	ACCEL FLAT PLATES TO HIGH VELOCITY	(DUPON)
JAP	43	2495	72	91	COWIN,S.C.	TD MODEL, POROUS MTRLS	(TULAN)
JGR	75	2063	70	110*	COWPERTHWAI	HUGON, RELEASE ADIABATS FOR ROCKS	(SRI)
JAP	42	457	71	70	COWPERTHWAI	CONSTIT RELS FROM EXPT DATA	
PTRS	256A	235	64	106*	COX ,A.D.	DEEP UNDERGROUND EXPLOSIONS	(USHEF)
PTRSL	264	497	69	13*	COX ,A.D.	SOLNS TO UNIAXIAL E/P WAVES	AD691620
IJNLM	6	27	71	21*	COZZARELLI,F	SIMIL SOLNS, IMPACT PROBS	(SUNYB)
AMS	2	291	65	64	CRISTESCU,N.	LOADING CRITERIA, RATE-SENSITIVE	
QJMAM	21	467	68	46*	CROZIER,R.J.	SPHERICAL EXPAN IN E/P SOLID	(STRAT)
GRES	CR 0484-1	68	11*	CUMMINGS,B.E	STRONG WAVES IN ELASTIC MTRLS		AD580236
JAP	30	568	59	78*	CURRAN,D.R.	EXPT-HUGONOT OF AL, STEEL	(SRI)
JAP	34	2677	63	78	CURRAN,D.R.	ATTEN OF SW IN ALUMINUM	(SRI)
JAP	36	2591	65	78	CURRAN,D.R.	RESIDUAL STRAIN IN ALUMINUM	(NORWA)
JAP	25	928	54	32	CURTIS,C.W.	2ND MODES, POCHHAMMER-CHREE EQN	(LEHIG)
JASA	30	552	58	33*	CURTIS,C.W.	END-LOADED BAR. I. THEORY	(LEHIG)
JASA	30	559	58	33*	CURTIS,C.W.	END-LOADED BAR. II. EXPTS	(LEHIG)
SC	RR-70-571	71	30*	DAHLGREY,D.A	COMPARISON-NUMERICAL TECHNIQUES, SW CALC		
JAP	41	652	70	94*	DANDEKAR,D.P	DEP, ELAST CONSTS RBCL, RBBR, RBI	(CORNU)
JAP	41	667	70	69	DANDEKAR,D.P	ELASTIC CONSTANTS OF CUBIC SOLID	(WSU)
PHYSR	122	713	58	75	DANIELS,W.B.	ELAST CONSTS, CU, AG, AU TO 10 KBAR	(CASE)
QAM	28	454	70	15	DANYLUK,H.T.	A NOTE ON E-P FLOW	(UALBE)

JMPS	8	52	60	5*DAVIDS,N.	GRAPHICAL ANALYSIS, SW	(PSU)
JFI	276	39	63	5*DAVIDS,N.	HYPERVELOCITY IMPACT	(SDSC)
AIAAJ	4	112	66	9*DAVIDS,N.	DIRECT CALC,CYL,SPH ELASTIC WAVES	
AIAAJ	9	1887	71	17*DAVIDS,N.	CORRECTIONS TO AIAAJ 4,112(66)	(PERKI)
BOEIN	125304-1	69	103	DAVIES,F.W.	HUGONIOT OF MYLAR	AD718398
JGR	76	2617	71	111 DAVIES,G.F.	SW EQNS STATE, ROCKS,MINS	(CIT)
PTRSA240	375	48	31	DAVIES,R.M.	STUDY OF HOPKINSON PRESSURE BAR	(UCAMB)
AMR	6	1	53	4 DAVIES,R.M.	STRESS WAVES IN SOLIDS	(UCW)
BJAP	7	203	56	32 DAVIES,R.M.	STRESS WAVES IN SOLIDS (BARS)	(UCW)
CAMBR(BK)	64	56	3	DAVIES,R.M.	WAVES IN SOLIDS (IN BATCHELOR 56)	
CAMBR BK	64	56	3	DAVIES,R.M.	SURVEYS IN MECHANICS	
JPHYD	4	1176	71	40 DAVIES,W.E.A	ELAST WAVES, 2-PHASE COMPOSITE	(UMANC)
JCM	5	478	71	40 DAVIS,R.O.	COMPOS HUGON, THEORY MIXTURES	(UNMEX)
JAP	42	5503	71	90 DAVISON,L.	SW STRUCTURE, POROUS SOLIDS	(SL)
JAP	43	988	72	44 DAVISON,L.	CONTINUUM MEASURES, SPALL DAMAGE	(SL)
JAP	39	6052	68	59 DAVIT,J.	LASER SURFACE DAMAGE OF GLASSES	
PREV	137	A1131	65	93 DEATON,B.C.	MELT CURVES OF S,SE,TE TO 45 KBAR	(GD)
PREV	137	A1410	65	93*DEATON,B.C.	TELLURIUM METAL TRANSIONS	(GD)
JAP	36	157	65	94 DECKER,D.L.	EON OF STATE OF NAOL	(BRIGY)
JAP	37	5012	67	94 DECKER,D.L.	EON OF STATE OF NAOL	(BRIGY)
JAP	43	4799	72	96 DECKER,D.L.	NAOL, CSOL TO 32 KBAR	(ANL)
JAM	9	A122	42	31 DEJUHASZ,K.J	GRAPHICAL ANALYSIS-ELAST BAR IMPACT	
JFI	248	15	49	32 DEJUHASZ,K.	GRAPHICAL ANALYSIS, BAR IMPACT	(PENNS)
JFI	248	113	49	32 DEJUHASZ,K.	GRAPHICAL ANALYSIS, BAR IMPACT	(PENNS)
JGR	76	1349	71	70*DEMAREST,H.	CENTRAL FORCE MODEL FOR CUBICS	(LAMON)
JGR	77	848	72	94 DEMAREST,H.	ALKALI HALIDES-HIGH P ELAST PROPS	(COLUM)
JAM	11	A65	44	31*DEMICHEAL,D.	EXPTS-DYNAMIC STRESS AND STRAIN	(GE)
JAP	40	3326	69	109 DENNEN,R.S.	SHOCK-TUBE-DRIVEN EXPTS ON SOLIDS	(IIT)
JASA	29	204	57	3 DERESIEWICZ	PLANE WAVES, THERMOEL SOLID	(COLU)
JCP	5	517	70	15*DERIBAS,A.A.	HYDRODYN EFFECTS,COLLIDING SOLIDS	(USSR)
UCRL	50442	68	55	DICKINSON,W.	FORWARD BREMSSTRAHLUNG	
GA	6509	65	28	DIENES,J.K.	THEORY-HYPERVEL IMPACT	AD617540
GAMD	8497/1	68	30	DIENES,J.K.	EULERIAN E/P METH.1.	AD678565
GAMD	8497/2	68	30	DIENES,J.K.	EULERIAN E/P METH. 2. FD EQNS	AD678566
GAMD	8497/3	68	30	DIENES,J.K.	EULERIAN E/P METH.3. PROGRAM	AD678567
GAMD	8497/ADD	68	30	DIENES,J.K.	EULERIAN E/P METH.ADD.	AD678568
ACADE(BK)	70	16	DIENES,J.K.	THEORY OF IMPACT (IN KINSLOW 70)		
JAP	43	1605	72	19*DIENES,G.J.	CALCS,SHOCKS IN 3-D SOLIDS	
JAP	40	3207	69	68*DILLON,O.W.	THERMODYN OF E-P MTRLS	(UKENT)
ASMET	52	153	30	31 DONNELL,L.H.	LONGIT WAVES, IMPACT	(UMICH)
PRLET	1	402	58	78 DORAN,D.G.	SW COMPRESSION OF ALUMINUM	(SRI)
JAP	30	568	59	78*DORAN,D.G.	EXPT-HUGONIOT OF AL STEEL	(SRI)
JAP	34	844	63	97 DORAN,D.G.	PYRO GRAPHITE TO 300 KBAR	(SRI)
ACADE(BK)	229	66	9	DORAN,D.G.	SHOCK EFFECTS IN SOLIDS	(SRI)
JAM	135	65	33	DOSHI,K.D.	WAVES, CONTINUOUSLY NONHOMOG BAR	(SRI)
JMPS	10	195	62	52*DOUCH,L.S.	EXPTS-PLASTIC WAVES	(ARDE)
PPS	91	959	67	93 DRABBLE,J.R.	3RD ORDER CONSTS, IN ANTIMONIDE	(UEXET)
PPS	92	1090	67	94 DRABBLE,J.R.	3RD ORDER CONSTS, KCL,NAOL,LIF	(UEXET)
RCREV	37	392	68	11 DREMIN,A.N.	STRONG SW EFFECTS ON SOLIDS	(USSR)
JCP	43	1381	65	93*DRICKAMER,H.	P EFFECT, COMPRESSIB OF 7 CRYSTALS	(UILL)
SOLSP	19	135	66	74 DRICKAMER,H.	HIGH-P X-RAY STUDIES, CRYSTALS	(UILL)
JAP	42	669	71	36*DRUMHEILLER,D	WAVES IN LAMINATED COMPOSITE	(SL)

JAP	28	998	57	3 DRUMMOND, W.	MULTIPLE SHOCK PRODUCTION	(SRI)
JAP	43	2204	72	51*DUBA, A.G.	QUASISTATIC DEFORMATION TO 5 KB	(LLL)
JGR	77	2496	72	112 DUBA, A.	GARNET TO 100 KBAR	(UCHIC)
PHYSR	89	832	53	62 DUGDALE, J.S.	THERMAL EXPAN OF SOLIDS	(NRC)
JMPS	13	17	65	8*DUNWOODY, J.	NON-LINEARITY EFFECT, ACCEL WAVE	(NPL)
IJNLM	4	7	69	68*DURELLI, A.J.	NATURAL STRESS	(CU)
JASA	27	1054	55	62 DUVALL, G.E.	ENTROPIC EQNS STATE, SW	(SRI)
AMREV	15	849	62	5 DUVAL, G.E.	SHOCK WAVES IN THE STUDY OF SOLIDS	(SRI)
BSSA	52	869	62	6 DUVALL, G.E.	CONCEPTS OF SHOCK WAVE PROPAGATION	(SRI)
ACADE(BK)		209	63	5 DUVALL, G.E.	SHOCK WAVES (IN BRADLEY 63)	(SRI)
REPRINT		179	65	7*DUVALL, G.E.	ELASTOPLASTICITY AND SW ATTEN	AD667339
JGR	71	4349	66	105*DUVALL, G.E.	RELAX BEHIND ELAST SW IN ROCK	(SRI)
WSU SDL	67	01	67	84 DUVALL, G.E.	EQUATIONS OF STATE IN SOLIDS	AD669251
MONO (BK)		19	68	12 DUVALL, G.E.	SHOCK WAVES IN SOLIDS (IN FRENCH 68)	(WSU)
SDL	68-	01	68	67 DUJALL, G.E.	EQNS STATE, MELTING SOLIDS	AD680960
IJMS	11	1	69	13*DUVALL, G.E.	FINITE WAVES IN LATTICES	(WSU)
JAP	40	3771	69	13 DUVALL, G.E.	STEADY SHOCK IN 1-D LATTICE	(WSU)
ACADE(BK)		7	71	18 DUVALL, G.E.	SHOCKS IN CONDENSED MEDIA (IN CALDIROLA)	
WSU SDL	70-	02	71	70 DUVALL, G.E.	EQN OF STATE OF SOLIDS. 4. (BRL)	AD719307
JCM	5	130	71	40 DUVALL, G.E.	SW PARAMS, 2-COMPON MIXTURE	(WSU)
ASTMP	47	502	47	31 DUWEZ, P.E.	EXPTS-PLASTIC DEFORM, IMPACT	(CIT)
JAP	21	987	50	32*DUWEZ, P.	PROPAG, PLASTIC DEFORMATION, SOLIDS	
IJNLM	6	27	71	21*DYM, C.L.	SIMIL SOLNS, NONLIN IMPACT	
ZAMP	14	12	63	46 EASON, G.	WAVES FROM SPH, CYL CAVITIES	
ASR	21	467	70	39 EASON, G.	WAVES IN INHOMOG SPH, CYL SURFS	(USTRA)
NOL	TR	68-160	68	23*EDWARDS, D.J.	1-D COMPUTER CODE (WONDY)	AD681377
NOL	TR	70- 79	70	53 EDWARDS, D.J.	EM VELOC GAGE AND PMMA PART VELOC	AD717346
NOL	TR	70-266	71	17 EDWARDS, D.J.	SHOCKS ONTO AL FOILS IN PMMA	
PPS	81	751	63	54 EHRENBURG, W.	E PENETRATION, LUMINESCENT MTRLS	(BIRKB)
JAP	37	4737	66	76 EHRENFELD, J.	HUGONIOT EQN STATE, ALKALI METALS	(GCA)
JAP	43	3191	72	56*EISEN, H.	2 MEV E-BEAM DOSE-DEPTH, POLYSTYRENE	
JGR	71	5911	66	44*EISLER, J.D.	SPALL FROM U/G EXPLOSION	
HDP	11/2	153	62	6*ELBAUM, C.	ULTRASONIC STRESS WAVES IN SOLIDS	(GTBRI)
PPS	91	947	67	104 ELCOMBE, M.M.	LATTICE DYNAMICS OF QUARTZ	(EDINU)
PEPI	2	69	69	100*ENGLAND, A.W.	UNIVERSAL EQNS STATE, OXIDES, SILICATES	(MIT)
JAP	34	746	63	63 ENIG, J.W.	E, P, V, T, S DESCRIP OF METALS	(NOL)
JGR	65	741	60	49*ENGLAND, J.L.	APPARATUS-PHASE EQM MEASUREMENTS	(CARNE)
JRMA	2	329	53	4 ERICKSEN, J.L.	WAVES IN INCOMPRESSIBLE MTRLS	(INDU)
PHYSF	1	535	58	27 ERKMAN, J.O.	NONUNIFORM OBLIQUE SHOCKS	(SRI)
SRI	TR	015-59	59	43 ERKMAN, J.O.	SPALL OF AL, CU	AD229841
SRI	TR	008-60	60	43 ERKMAN, J.O.	SPALLING OF ALUMINUM	AD244108
JAP	32	939	61	43 ERKMAN, J.O.	SMOOTH SPALLS AND IRON	(SRI)
DETSYM	4	277	65	7 ERKMAN, J.O.	EP EFFECTS IN SW ATTEN	(SRI)
REPRINT		179	65	7 ERKMAN, J.O.	ELASTOPLASTICITY AND SW ATTEN	AD667339
JAP	38	5395	67	79 ERKMAN, J.O.	ATTEN OF SHOCK WAVES IN AL	(SRI)
NOL	TR	68-160	68	23 ERKMAN, J.O.	1-D COMPUTER CODE (WONDY)	AD681377
NOL	TR	70- 79	70	53*ERKMAN, J.O.	EM VELOC GAGE AND PMMA PART VELOC	AD717346
NOL	TR	70-266	71	17*ERKMAN, J.O.	SHOCKS ONTO AL FOILS IN PMMA	
GAMD		8497/2	68	30*EVANS, M.W.	EULERIAN E/P METH. 2. FD EQNS	AD678566
PPS	60	1	48	85*EVANS, W.M.	SW IN STEEL AND LEAD	(ARA)
GAMD		8497/3	68	30*EVANS, M.W.	EULERIAN E/P METH. 3. PROGRAM	AD678567
USPEK	9	54	66	65 EVDOKIMOVA, V	HIGH-P P-T DIAGRAMS, PHASE CHANGES	(USSR)
JAP	42	5837	71	55 EVERHART, T.E	KEV ELECTRON PENETRATION	(UCALB)

JCP	3	226	68	12	FACCIOLI, E.	EULERIAN MODEL, SPH SYM	
JAP	39	3328	68	59*	FALCONER, W. E.	LASER-CAUSED CHARGED PARTICLES	
DOKLA	16	322	71	87	FATEEVA, N. S.	TA MELTING CURVE TO 60 KBAR	(USSR)
JAM	11	A65	44	31	FEHR, R. O.	EXPTS-DYNAMIC STRESS AND STRAIN	(GE)
INTER	BK		69	109*	FERNBACH, S.	MATTER UNDER UNUSUAL CONDITIONS	
JFI	283	203	67	10	FINE, A. D.	E-P WAVE PROPAGATION	(UNITE)
JMPS	9	179	61	5	FLAVIN, J. N.	PLANE THERMO-ELASTIC WAVES, PRESTRESSED	
JASA	30	552	58	33	FOLK, R.	END-LOADED BAR. I. THEORY	(LEHIG)
JAP	40	4195	69	68	FOLTZ, J. V.	THEO HUGONOT STATES, AL, CU	(NWL)
JMPS	18	427	70	83*	FOLTZ, J. V.	THEO E/P EQNS STATE, ARMCO IRON	(NWL)
JCP	40	555	68	92*	FORBES, J. W.	BORON TRINITRIDE TRANSFORMATION BY SHOCK	
PHYSR	175	905	68	67*	FORBES, J. W.	ID PROPS, NA, ANHARMONIC CONTRIB	(NOL)
JAP	40	4624	69	75*	FORBES, J. W.	T EFFECT ON SW IN CU-ZN	(NOL)
FRLET	1	402	58	78*	FOWLES, G. R.	SW COMPRESSION OF ALUMINUM	(SRI)
JAP	31	655	60	52	FOWLES, G. R.	SW ATTEN, FLYING PLATE	(SRI)
JAP	32	1475	61	78	FOWLES, G. R.	SW COMPRESSION OF 2024 ALUMINUM	(SRI)
ACADE(BK)		209	63	5*	FOWLES, G. R.	SHOCK WAVES (IN BRADLEY 63)	(SRI)
JAP	36	1377	65	50	FOWLES, G. R.	HUGONOT DATA USING A MACH STEM	(SRI)
WSU	SDL	67	01	67	84*	FOWLES, G. R.	EQUATIONS OF STATE IN SOLIDS AD669251
SDL		68-	01	68	67*	FOWLES, G. R.	EQNS STATE, MELTING SOLIDS AD680960
WSU	SDL-70-01	70		69	FOWLES, R.	CONSTIT RELS FROM PLANE EXPT(WSU)	AD709736
JAP	41	360	70	15	FOWLES, R.	PLANE STRESS WAVES IN SOLIDS	(WSU)
JAP	41	2740	70	46	FOWLES, R.	CONSERV RELS, SPH, CYL STRESS WAVES	(PIC)
JASA	30	552	58	33*	FOX, G.	END-LOADED BAR. I. THEORY	(LEHIG)
JASA	30	559	58	33	FOX, G.	END-LOADED BAR. II. EXPTS	(LEHIG)
JAM		441	68	11	FRANCIS, P. H.	TEMP GRAD EFFECTS ON E-P WAVE	AD680497
BRL	MR	2075	70	53	FRANZ, R. E.	EXPT-HUGONOT OF TEFLON	AD716333
JAP	39	5868	68	104	FRASER, D. B.	ACOUSTIC PROPS, VITREOUS SILICA	
MONO	BK		68	12	FRENCH, B. M.	SHOCK METAMORPHISM, NATURAL MATERIALS	
JGR	69	2947	64	105*	FRITZ, J. N.	COMPOS OF EARTHS INTERIOR	(LASL)
JGR	72	4999	67	107*	FRITZ, J. N.	HUGONOT FOR 12 ROCKS	(LASL)
ACADE(BK)		293	70	74*	FRITZ, J. N.	EQN OF STATE FROM SW WORK (IN KINSLOW)	
PHYSR	157	524	67	66*	FRITZ, T. C.	GRUNEISEN GAMMA FROM ELAST DATA	(BELLT)
KN	69-500(R)	69		68	FROMME, J. A.	MODEL, 3D VISCOELASTOPLASTICITY	AD699835
AFWL	TR	64-113	65	105	FUGELSO, L. E.	CLOSE-IN SURF BURST EFFECTS	AD619969
BJAP	15	751	64	50	FULLER, P. J.	DYNAM P MEAS TO 300 KBAR	
BJAP	2	275	59	75	FULLER, P. J.	RELEASE PATHS, AL, MG TO 200 KB	(UKAEA)
JPCS	23	395	62	63	FUMI, F. G.	MIE-GRUNEISEN, HILDEBRAND EQNS	(ANL)
JETP	15	477	62	63*	FUNTIKOV, A. I.	COMPRESSION OF POROUS AL, CU, PB, NI	(USSR)
WASHU		69-3	69	79	FYFE, I. M.	AL+PLANE CYLIN STRESS WAVES	AD695703
JGR	71	5504	71	111*	GAFFNEY, E. S.	DYNAMIC COMPRESSION, ENSTATITE	(CIT)
LASL	LA	3720	67	27*	GAGE, W. R.	SIN-1D CODE, ELASTIC-PLASTIC	U196686
JETP	16	94	63	63	GANDELMAN, G.	QM EQN OF STATE FOR IRON	(USSR)
ZAMP	19	243	68	45	GARG, S. K.	SPH EP WAVES	
ZAMP	19	773	68	45	GARG, S. K.	CALCS-SPH EP WAVE PROPAG	
UTIAS	TN	132	59	45	GARG, S. K.	SPHERICAL EP WAVES IN SOLIDS	AD690799
ARL		70-0072	70	46	GARG, S. K.	SPH E-P WAVES IN SOLIDS (UTORO)	AD709369
SSS		SR-267	70	110*	GARG, S. K.	STRESS EFFECTS, POROUS EARTH	AD712852
JCM	5	428	71	41	GARG, S. K.	HUGONOT ANALYSIS, COMPOSITES (TINC)	(SSS)
JCM	5	439	71	39	GARG, S. K.	FIND ERROR IN TORVIK EQUATION	
DNA		27251	71	41*	GARG, S. K.	WAVES, POROUS GEOLOGIC COMPOSITES	AD732023
JGR	76	7947	71	30	GARG, S. K.	WAVES, FLUID-SAT SOLID (TINC)	(SSS)

PREVB	4	128C	71	80 GAUSTER,W.B.	LOW-TEMP G FOR SI, AL	(SL)
ACADE(BK)			70	16 GEHRING,J.W.	THIN-TARGET IMPACT THEORY (IN KINSLOW)	
ACADE(BK)			70	16 GEHRING,J.W.	IMPACT-ENGINEERING ASPECTS (IN KINSLOW)	
JPCS	32	2545	71	76*GETTING,I.C.	ALKALI METALS TO 45 KBAR	(UCLA)
JAP	41	652	70	94 GHAFELEHBASHIP,T	DEP,ELAST CONSTS RBCL,RBBR,RBI (CORNU)	
PREV	139	A1666	63	95 GHATE,P.B.	3RD ORDER ELAST CONSTS, ALK HALIDES(CORNU)	
PSS	18	265	66	95*GHATE,P.B.	ELAST CONSTS, ALKALI HALIDES (CORNU)	
PSS	21	507	67	95*GHATE,P.B.	P DERIVS,ELAST CONSTS, NABR,KF (CORNU)	
JPCS	26	1523	65	93 GIARDINI,A.A	BISMUTH COMPRESSIBILITY (USAEL)	
PREV	112	136	58	92 GIBBONS,D.F.	THERMAL EXPANSION,DIAMOND STRUCTURE(BELL)	
JGR	76	5489	71	99 GIBBONS,R.V.	SHOCK METAMORPHISM,SI GLASSES (CIT)	
JAM	36	363	71	44*GIEDT,W.H.	E-BEAM MELTING,SPALL METALS (LRL)	
AJP	36	822	68	34 GILBERT,I.H.	LONGIT VIBRATIONS,ELASTIC ROD (BRANU)	
JMPS	18	397	70	15 GILLIS,P.P.	T EFFECTS, SW IN VISCOPL SOLIDS (UKENT)	
JAP	37	2283	66	59*GILMAN,J.J.	ELASTIC EXPLOS IN SOLIDS	
AMR	21	767	68	12 GILMAN,J.J.	DISLOCATION DYNAMICS(REVIEW) (UILL)	
PREV	102	308	56	62 GILVARRY,J.J	LINDEMANN AND GRUNEISEN LAWS (RAND)	
PREV	102	317	56	62 GILVARRY,J.J	GRUNEISEN LAW AND HIGH-P FUSION CURV(RAND)	
PREV	102	331	56	62 GILVARRY,J.J	G FOR SOLID, FINITE STRAIN (RAND)	
JPCS	26	1157	65	63 GINELL,R.	TAITS LAW. I. ALKALI METALS (CUNY)	
UCRL		51079	71	24 GIROUX,E.D.	HEMP USERS MANUAL (UCRL)	
ACADE(BK)			70	16*GLASS,C.M.	IMPACT METALLURGY (IN KINSLOW)	
JCP	5	517	70	15 GODUNOV,S.K.	HYDRODYN EFFECTS,COLLIDING SOLIDS (USSR)	
DOKLA	14	65	69	68*GOGOLEV,V.M.	SHOCK ADIABATS OF SOLID (USSR)	
IIT	TR	68-181	68	29 GOLLAND,R.W.	SLAM CODE. IV. EXTRA AD840138	
JAP	36	2189	65	88*GONAS,A.M.	ELAST PROPS,TUNGSTEN,T=24-1200 C (UCRI)	
JETP	23	777	66	95*GONCHAROVA,V	P EFFECT,ELAST PROPS, RBCL, RBI (USSR)	
JAP	26	1472	55	77 GORANSON,R.	DYNAMIC COMPRESSIBILITY, METALS (LASL)	
BAPS	14	386	69	59*GORDON,D.I.	(ABST)MANG PROP CHANGES,LASEL IRRAD (NOL)	
JGR	76	1248	71	111 GORDON,R.B.	CRYSTAL PLASTICITY AT HIGH P (YALEU)	
JASA	40	1322	70	59 GOURNAY,L.S.	SURF HEATING TO ACOUSTICS	
JAP	40	2649	69	75 GRACE,F.I.	SW STRENGTHENING OF FE, NI (NWL)	
JAP	40	4195	69	68*GRACE,F.I.	THEO HUGONIOT STATES, AL CU (NWL)	
BMI		197A-4-3	68	43*GRAFF,C.F.	SPALL FRACTURE, RESPONSE AD669440	
JAP	36	1775	65	50 GRAHAM,R.A.	QUARTZ SUBMICROSECOND STRESS GAGE (SL)	
JAP	36	2955	65	98 GRAHAM,R.A.	GERMANIUM, 20 TO 140 KBAR (SL)	
JPCS	27	1519	66	98 GRAHAM,R.A.	SW COMPRESSION OF GERMANIUM (SL)	
APLET	11	69	67	57 GRAHAM,R.A.	STRESSES FROM E BEAMS (SL)	
SC	R-68-1857	68	73 GRAHAM,R.A.	SUMMARY-HUGONIOT ELAST MEAS (SL)		
JGR	76	4908	71	92 GRAHAM,R.A.	LINEAR BULK MOD, SAPPHIRE (SL)	
JAP	43	826	72	104 GRAHAM,R.A.	SPURIOUS SIGNALS,QUARTZ GAGES (SL)	
PREV	153	765	67	75*GRANATO,A.V.	THERMAL PROPS-NOBLE METAL ANHARMONY (UILL)	
PHACO	8	237	71	70*GRANATO,A.V.	3RD ORDER ELAST CONSTS,SOLID PROPS (UILL)	
AIP	BK	2200	72	74 GRAY,D.E.	AIP HANDBOOK, 3RD ED	
JMPS	9	179	61	5*GREEN,A.E.	PLANE THERMO-ELASTIC WAVES,PRESTRESSED	
ARMA	18	251	65	64 GREEN,A.E.	GENERAL THEORY-EP CONTINUUM (NEWCA)	
IJES	4	483	66	42 GREEN,A.E.	CONSTIT EQNS, INTERACTING CONTINUA (UNEWC)	
CALUB			69	13*GREEN,A.E.	ACCEL WAVES IN E/P MTRLS AD695960	
ARMA	16	79	64	8 GREEN,W.A.	GROWTH OF PLANE DISCONTINUITIES (UNOTT)	
JAP	35	2170	64	7*GREENE,R.F.	ELAST WAVE DECAY WITH DISLOCATIONS (NOL)	

AIAAJ	9	1274	71	40 GRESZCZUK, L.	INTERFIBER STRESSES	(MCDON)
JAM	14	A337	47	31*GRIFFIS, L.	PERMANENT STRAIN, IMPACTED BAR	(IIT)
JAM	15	256	48	4*GRIFFIS, L.	PROPAG, PLASTICITY IN 1D COMPRESSION	(UMASS)
PREV	107	368	57	99 GROSS, B.	E-BEAM EFFECT, BOROSILICATE GLASS	
IJES	6	295	68	11 GROT, R. A.	RELATIVISTIC ELASTIC WAVES	(PERU)
JPCS	30	2091	69	76 GROVER, R.	COMPRESSIBILITY, ALKALI METALS	(LRL)
JPCS	31	2347	70	69 GROVER, R.	DYNAMIC VS STATIC DATA	(LRL)
JPCS	32	2539	71	76 GROVER, R.	ALKALI METAL PROPERTIES	(LRL)
ANNPK	39	257	12	61 GRUNEISEN, E.	THEORIE DES FESTEN ZUSTANDES...	
GORDO	8K		64	47 GSCHNEIDNER, K.	METALLURGY AT HIGH P, T	
SSF	16	275	64	73 GSCHNEIDNER, K.	PROPS METALS, SEMIMETALS	
JAP	38	4086	67	79*GUENTHER, A. H.	ULTRASONICS, 1060, 6061-T6 AL	(AFWL)
JAP	40	1768	69	102*GUENTHER, A. H.	SOUND SPEED VS P, T IN PMMA	(AFWL)
JAP	43	976	72	103*GUENTHER, A. H.	EQU STATE, POLYSTYRENE, PMMA	(AFWL)
AIAAJ	8	1421	70	97*GUESS, T. R.	PROPS OF DISTENDED CARBONS	(SL)
JAP	42	5335	71	70*GUPTA, P. N.	ELAST CONSTS, AL, CU, NI	(INDIA)
ARMA	19	1-	65	8*GURTIN, M. E.	WAVES IN MTRLS WITH MEMORY. I-IV	(BROWN)
PRS	A292	562	66	65*GURTIN, M. E.	TD, 1D SW IN MTRLS WITH MEMORY	(MELLO)
JASA	41	1320	67	10 GURTIN, M. E.	ACCEL WAVES IN ELASTIC BODIES	(CASE)
IJSS	7	5	71	17*GURTIN, M. E.	GROWTH OF 1D SHOCK WAVES	(SL)
JAM	36	479	69	35*GURTMAN, G. A.	DISPERSIVE PULSE, COMPOSITE	(MCDON)
PMM	22	763	58	44 GUSEIN-ZADE	ACOUSTIC THEORY OF SPALLING	
JAP	39	4610	68	100*GUST, W. H.	SHOCK COMPRESS, ALUMINA	(SRI)
JAP	41	2443	70	75 GUST, W. H.	SW-INDUCED CHANGES, FE-CR-NI ALLOYS	(LRL)
JAP	42	1897	71	113 GUST, W. H.	YIELD STRENGTHS, SILICON	
JAP	39	2082	65	8 GYLDEN, N.	SIMILARITY, SOME METAL FLOWS	(SWED)
WSL	SDL 70-	04	70	34 HABBERSTAD, J.	ELAST WAVES, BAR+DISCONTINUITY	AD716547
AFML	TR 68-	311	70	39 HAENER, J.	VISCOEL WAVES, UNIDIR COMPOS (WHITT)	AD717760
AFML	TR 68-	311	70	38 HAENER, J.	MICRODYNAMICS, WAVE PROPAG (WHITT)	AD702108
AFML	TR 68-	311	71	42 HAENER, J.	4. ATTENUATION CALCS	AD734658
GAMD	8497/ADD	68	30*HAGEMAN, L. J.	EULERIAN E/P METH. ADD.	AD678568	
GAMD	8497/3	68	30*HAGEMAN, L. J.	EULERIAN E/P METH. 3. PROGRAM	AD678567	
SSS	3SR-350/1	71	26 HAGEMAN, L. J.	HELP-2D E/P EULERIAN CODE	AD726459	
SSS	3SR-350/2	71	26 HAGEMAN, L. J.	HELP-FORTRAN LISTINGS	AD726460	
SSS	3SR-201	71	26 HAGEMAN, L. J.	HELP CALCS-ARMOR PENETRATION	AD725998	
JGR	76	7052	71	100*HAHN, W. C.	ELAST MODULI-SINTERED NI OXIDE	(LEHIG)
RSI	29	267	58	49 HALL, H. T.	APPARATUS-HIGH P, T DATA	(BYU)
RSI	31	125	60	49 HALL, H. T.	APPARATUS FOR HIGH P, T	(GE)
JAP	39	5488	68	83*HALPIN, W. J.	SHOCK COMPRESS, POROUS IRON	(SL)
NOL	TR 70-	141	70	74 HANLEIN, S. L.	LIST OF PROPERTIES, METALS, PLASTICS	(NOL)
JCP	51	425	69	102*HANSEN, W. N.	THERMAL EXPAN, POLYETHYLENE	(NARC)
JCP	3	307	68	27*HANSON, M. E.	DIFFCE EGNS, 2D ELASTIC FLOW	
JAP	39	3699	68	59 HARRINGTON, R.	THERMAL COND NEAR METAL SURFACE	
JAP	34	3405	63	5 HARRIS, P.	DECAY OF ELASTIC PRECURSORS	(NOL)
JAP	35	2170	64	7 HARRIS, P.	ELAST WAVE DECAY WITH DISLOCATIONS	(NOL)
JASA	40	226	66	9 HARRIS, P.	WEAK SHOCKS IN SOLIDS	(NOL)
PA	TR	4255	71	70 HARRIS, P.	G FOR POROUS MATERIALS	(PA)
JAP	35	2090	64	78 HARTMAN, W. F.	UNLOADING OF 6061-T6 ALUMINUM	(SC)
NOL	TR 71-	208	72	103*HARTMANN, B.	BULK MOD OF POLYETHYLENE OXIDE	(NOL)
AMR	17	1	64	37 HASHIN, Z.	MECH BEHAVIOR, HETEROGENEOUS MEDIA	(UPENN)
JAM	31	223	64	37 HASHIN, Z.	ELASTIC MODULI, FIBER COMPOSITES	(UPENN)

NOLTR 72-274

IJSS	6	539	70	39 HASHIN,Z.	COMPLEX MODULI. I. THEORY	(UPENN)
BRL MR	2058	70	94 HAUVER,G.E.	HUGONIOT OF LIF CRYSTAL	AD712320	
JAP	43	2734	72	50 HAWKE,R.S.	METHOD-TO SEVERAL MEGABARS	(LRL)
PRS A294	38	66	4 HAZEBROEK,P	ELASTIC WAVES,FINITE LINE SOURCE		
GE	R65SD30	65	64 HEER,E.	ELASTIC-PLASTIC EQNS WITH COMPRESSIBILITY		
JAM	37	339	70	60 HEGEMIER,G.	STRESS FROM IMPULSIVE RADIATION	(UCALS)
JASA	51	210	72	18 HENNEKE,E.G	STRESS WAVE REFL,BDY,ANISOTROPIC	(FSU)
GORDO BK		64	47*HEPWORTH,M.T	METALLURGY AT HIGH P,T		
ARMA	19	1-	65	8*HERRERA R.,I	WAVES IN MTRLS WITH MEMORY,I-IV	(UMEXI)
JAM	35	408	68	35*HERRMANN,G.	T-HARM WAVES,STRATIFIED MEDIUM	(NWU)
JAM	35	467	68	35*HERRMANN,G.	CONTINUUM THEORY, LAMINATED MEDIUM	(NWU)
JAM	35	689	68	35*HERRMANN,G.	VIBRATIONS OF LAMINATED BODY	(NWU)
AIAAJ	6	1832	68	37*HERRMANN,G.	DISPERSION IN COMPOSITES	(NWU)
GORDO(BK)	183	70	38 HERRMANN,G.	DYNAMICS OF COMPOSITES(REC.ADV.ENG.SCI.V 5		
PERGA(BK)	337	70	40 HERRMANN,G.	WAVE PROPAG IN COMPOSITES(IN WENDT70)	(NWU)	
ASD TDR-62-399	62	5 HERRMANN,W.		STRESS WAVES,SPALL,1-D STRAIN	(MIT)	
AFSWC TDR-63-12	63	27 HERRMANN,W.		INCLUDING MATERIAL STRENGTH	AD410386	
JAP	34	2046	63	78*HERRMANN,W.	EQN STATE 6061-T6 ALUMINUM AT LOW P	(SC)
AFWL TR 64-107	64	27 HERRMANN,W.		LAGRANGIAN 2-D FD WITH MTRL STR	AD609523	
JAP	35	1203	64	78*HERRMANN,W.	DYNAMIC RESPONSE OF AL	(SC)
SC	RR-66-601	67	23 HERRMANN,W.	WONDY-3D E/P COMPUTER CODE	(SL)	
SC	RR 66-602	67	24*HERRMANN,W.	TOODY 2-D COMPUTER CODE	(SL)	
SC	R-68-1784	68	12 HERRMANN,W.	BASIC RESPONSE PHENOMENOLOGY	(SL)	
SC	RR-66-2678	68	89 HERRMANN,W.	EQN STATE, CRUSHABLE MTRLS	(SL)	
ASME (BK)		69	13 HERRMANN,W.	NONLIN WAVES, METALS (IN MIKLOWITZ 69)		
JAP	40	2490	69	89 HERRMANN,W.	CONSTIT EQN,DUCTILE POROUS MTRLS	(SL)
SC	RR 70-471	70	23 HERRMANN,W.	STRAIN RATE EFFECTS FOR WONDY	(SL)	
JAM	38	363	71	44*HESSE,J.L.	E-BEAM MELTING,SPALL METALS	(LRL)
JAM	35	489	68	12*HETNARSKI,R.	PROPAG OF DISCONTINUITIES	(COLUM)
JGR	71	5911	66	44*HEUBACH,H.G.	SPALL FROM U/G EXPLOSION	
GE	R64SD64	64	8*HEYDA,J.F.	IMPACT-CALC VS EXPT	AD606123	
GE	R64SD87	64	7 HEYDA,J.F.	PEAK P IN HYPERVELOC IMPACT	AD452991	
JAP	39	4873	68	67 HEYDA,J.F.	TWO UNIVERSAL HUGONIOTS	(GE)
PHACO	8	203	71	48 HEYDEMANN,P.	ULTRASONIC MEAS, VERY HIGH P	(NBS)
ACADE(BK)		70	16 HICKERSON,N.	STRESS WAVES IN SOLIDS (IN KINSLOW 70)		
INTER(BK)	43	69	109 HIGGINS,G.H.	RESP OF ROCKS TO STRESS (MARK68)	(LRL)	
PREV	153	764	67	75 HIKI,Y.	THERMAL PROPS-NOBLE METAL ANHARMONY	(UILL)
JMPS	10	1	62	6 HILL,R.	ACCELERATION WAVES IN SOLIDS	(UNOTT)
JMPS	11	357	63	42 HILL,R.	ELAST PROPS,REINFORCED SOLIDS	(UNOTT)
JAP	37	3567	66	75*HIMMEL,L.	T DEPEND,ELAST CONSTS CU,AG,AU	(LRL)
NOL	TR 70-141	70	74*HINCKLEY,W.M	LISTS OF PROPERTIES,METALS,PLASTICS	(NOL)	
JAP	40	3151	69	79 HO ,P.S.	P DEPENDENCE, AL ELASTIC CONSTANTS	(CORN)
JAP	42	5837	71	55*HOFF,P.H.	KEV ELECTRON PENETRATION	(UCALB)
JAP	39	4555	68	77 HOFMANN,R.	SHOCK COMPRESS,POROUS AL (CALC)	(PIC)
PHACO	8	237	71	70 HOLDER,J.	3RD ORDER ELAST CONSTS,SOLID PROPS	(UILL)
JAP	35	1771	64	86*HOLLAND,J.R.	GAUSCHINGER EFFECT IN MILD STEEL	(SL)
JAP	36	3955	65	98*HOLLAND,J.R.	GERMANIUM, 20 TO 140 KBAR	(SL)
JPCS	27	1519	66	98*HOLLAND,J.R.	SW COMPRESSION OF GERMANIUM	(SL)
RSI	36	1617	65	50*HOLLENBACH,R	INTERFEROMETER PROPERTY MEASUREMENT	(SL)
JAP	41	4208	70	92*HOLLENBACH,R	SW STUDIES,PMMA,SAPPHIRE	(SL)
JAP	43	4669	72	51*HOLLENBACH,R	LASER INTERFEROMETER FOR MEAS VELOC	(SL)

NOLTR 72-274

AFML	TR	69-152	70	39*	HOLMES, B.S.	EXPT-HUGONIOT, 1D FIBER-REINF	AD716560	
JAP	43	957	72	41	HOLMES, B.S.	STEADY SW, 1D FIBROUS COMPOS	(DREXE)	
JAP	43	1626	72	91*	HOLT, A.C.	PORE-COLLAPSE RELATIONS	(LLL)	
UCRL		51246	72	44*	HOLT, A.C.	SPALL THRESHOLDS, 6061T6 ALU258294	(LLL)	
JAP	43	759	72	91*	HOLT, A.C.	MODIFIED P-ALPHA FOR COMPOSITES	(LRL)	
TASM	60	152	67	79	HOLT, D.L.	STRAIN-RATE DEPEND IN AL	(GMTC)	
JGR	70	893	65	25	HOLZER, F.	EXPT, CALC-UG NX SHOCK WAVE	(LRL)	
PRS	A290	408	66	27	HOLZER, F.	CALC OF UG NUCLEAR EXPLOS	(UCRL)	
SC	RR-66-601	67		23*	HOLZHAUSER, P	WONDY-1D E/P COMPUTER CODE	(SL)	
AFML	TR	70-158	70	39	HOPKINS, A.K	CU+POLYETH MIX + SHOCK	AD712062	
AMREV	14	417	61	5	HOPKINS, H.G.	DYNAMIC ANELASTIC METAL DEFORMATIONS		
PTRS	256A	235	64	106*	HOPKINS, H.G.	DEEP UNDERGROUND EXPLOSIONS	(USHEF)	
PTRSA	213	437	14	31	HOPKINSON, B.	METHOD OF MEASURING PRESSURE		
WSU	SDL	67	01	67	84*	HORIE, Y.	EQUATIONS OF STATE IN SOLIDS	AD669251
JAP	40	5368	69	13	HORIE, Y.	NUMERICAL INTEGR, E-P SW	(NCSU)	
JAP	42	2925	71	17	HORIE, Y.	PLANE SHOCK PROFILES IN SOLIDS		
NCSU	TR	71-1	71	80*	HORIE, Y.	PLANE SW STRUCT, 6061-T6 AL	AD720715	
JAP	43	3362	72	19*	HORIE, Y.	SHOCK STRUCTURE IN 606-T6 AL	(NCSU)	
JPCS	33	1838	72	75	HSIEH, K.	EQN STATE, NOBLE METALS	(UMD)	
JCM	5	320	71	40	HUANG, W.C.	PLASTIC BEHAVIOR OF SOME COMPOSITES	(HARVU)	
JFI	276	39	63	5	HUANG, Y.K.	HYPERVELOCITY IMPACT	(SDSC)	
JCP	45	1979	66	65	HUANG, Y.K.	TD OF SW COMPRESSION, METALS	(WATEA)	
JCP	46	4570	67	66	HUANG, Y.K.	COMPRESSIBILITY, DEBYE SOLID	(WATEA)	
JPC	73	2459	69	68	HUANG, Y.K.	ON TAIT EQN OF COMPRESSIBILITY	(WATEA)	
WATER	WVT-7039	70		15	HUANG, Y.K.	NONLIN STRESS WAVES IN SOLIDS	AD712991	
JAP	42	3212	71	20	HUANG, Y.K.	USING QUADRATIC US-UP RELATION		
JAP	42	4084	71	17	HUANG, Y.K.	ACOUSTIC VS SW PROPERTIES		
PREV	63	46	43	31	HUDSON, G.E.	DISPERSION, ELAST WAVES, CYLINDER	(BROWN)	
PREV	75	1552	49	32	HUGHES, D.S.	ELASTIC PULSES IN METAL RODS	(UTEX)	
QJMAM	21	467	68	46	HUNTER, S.C.	SPHERICAL EXPAN IN E/P SOLID	(STRAT)	
PREV	72	321	47	48	HUNTINGTON, H	ULTRASONIC MEAS, SINGLE CRYSTALS	(MIT)	
APLET	11	69	67	57*	HUTCHISON, R.	STRESSES FROM E BEAMS	(SL)	
JMPS	8	52	60	5	HWANG, S.Y.	GRAPHICAL ANALYSIS, SW	(PSU)	
JAP	43	526	72	104*	INGRAM, G.E.	SPURIOUS SIGNALS, QUARTZ GAGES	(SL)	
JAP	36	1377	65	50*	ISEBELL, W.M.	HUGONIOT DATA USING A MACH STEM	(SRI)	
JAP	37	3493	66	75*	ISEBELL, W.M.	LIGHT GAS GUN HUGONIOTS	(GMDRL)	
DASA		2419	70	43	ISEBELL, W.M.	SW PROPAG, FRACTURE IN 6061-T6 AL	AD705536	
DASA		2501-6	72	87	ISEBELL, W.M.	MATERIALS. VI. TANTALUM	(GMTC) AD741217	
DASA		2404	70	45	ISENBERG, J.	SPH WAVES IN INELASTIC MTRL	AD703295	
JETP	13	1321	61	83	IVANOV, A.G.	RAREFACTION SHOCKS IN IRON, STEEL	(USSR)	
SOVPHS	5	196	63	83	IVANOV, A.G.	E-P WAVES IN IRON, STEEL	(USSR)	
ONR	ACR-126	65		52	JACOBS, S.J.	FOURTH DETONATION SYMPOSIUM		
ONR	ACR-184	70		52	JACOBS, S.J.	FIFTH DETONATION SYMPOSIUM		
PPS	60	1	48	85*	JAMES, H.J.	SW IN STEEL AND LEAD	(ARA)	
JAP	37	3172	66	93	JEFFERY, R.N.	P CALIBRATION TO 100 KBAR WITH NaCl	(BYU)	
JAP	38	1578	67	27	JOHNSON, J.N.	Q-CODE CALCS, PRECURSOR IN IRON	(WSU)	
AJP	36	917	68	67	JOHNSON, J.N.	SIMPLE MIE-GRUNEISEN MODEL	(SL)	
JAP	40	2287	69	68	JOHNSON, J.N.	CONSTIT RELATION, RATE-DEPEN FLOW, METALS		
JAP	40	4321	69	79	JOHNSON, J.N.	WAVE PROFILES, 6061-T6 AL	(SL)	
JAP	42	5522	71	41	JOHNSON, J.N.	SW, LINEARLY ELAST ANISOTROPIC MTRL	(SL)	
JAP	43	2074	72	19	JOHNSON, J.N.	PLANE WAVES, ANISOTROPIC SOLIDS	(SL)	

AFML	TR 69-220	69	38 JOHNSON, M.W.	PREDICTING PROPS, FIBER-REINF	MTRLSAD686457
CREND	249	2506	59 62*JOIGNEAU, S.	GRUENEISEN PARAMETER	(FRANC)
AFSWC	TDR-63-12	63	27*JONES, A.H.	INCLUDING MATERIAL STRENGTH	AD410386
JAP	37	3493	66 75 JONES, A.H.	LIGHT GAS GUN HUGONIOTS	(GMDRL)
JGR	76	4913	71 111*JONES, A.H.	SHOCK, STATIC LOADING OF 3 ROCKS	
JASA	35	5	63 5 JONES, G.L.	ELASTIC WAVE INTERACTION	(MRI)
SAMSO	TR-70-217	70	36 JONES, J.P.	PULSFS IN LAMINATES	(AEROS) AD708464
JAP	33	3224	62 50 JONES, O.E.	DYNAMIC YIELD, QUARTZ GAGE	(SC)
JAP	35	1771	64 86 JONES, O.E.	BAUSCHINGER EFFECT IN MILD STEEL	(SL)
JAP	36	3955	65 98*JONES, O.E.	GERMANIUM, 20 TO 140 KBAR	(SL)
JPCS	27	1519	66 98*JONES, O.E.	SW COMPRESSION OF GERMANIUM	(SL)
SC	R-68-1857	68	73*JONES, O.E.	SUMMARY-HUGONIOT ELAST MEAS	(SL)
JAM	36	470	69 34*JONES, O.E.	CIRCULAR END-LOADED BAR	(SL)
JAP	40	4920	69 82 JONES, O.E.	SW-INDUCED YIELDING IN CU CRYSTALS	(SL)
JMM	11	503	62 4 JORDAN, D.W.	STRESS WAVE, FINITE CYL SOURCE	
JAP	39	3931	68 104 JULIAN, C.L.	CALC, ELAST CONSTS, ALPHA QUARTZ	(SL)
JAP	41	678	70 56*JUPITER, C.P.	4,8 MEV ELECTRONS THRU BE, AL, AU	(GA)
JAP	43	4348	72 102*JURA, G.	G OF CRYSTALLINE POLYETHYLENE	(UCALB)
CONBU	BK	257	71 71*KALININ, V.A.	EQNS STATE, SOLIDS, HIGH P, T	(USSR)
JGR	71	3985	66 65*KANAMORI, H.	EQNS STATE FROM SW EXPTS	(CALUB)
JGR	73	6477	68 108*KANAMORI, H.	SW EQNS STATE, ROCKS, MINERALS	(CIT)
PREV	126	620	62 54 KANTER, H.	1-10 KEV RANGE INTERPRETATION	(WRL)
BSSA	58	367	68 35*KARAL, F.C.	ELAST WAVES IN LAYERED MEDIA	(NYU)
JAP	21	987	50 32 KARMAN, T.VON	PROPAG, PLASTIC DEFORMATION, SOLIDS	
JAP	37	402	66 9*KARNES, C.H.	STRAIN-RATE EFFECTS IN METALS	(SC)
JAP	37	1989	66 78*KARNES, C.H.	YIELD POINT PHENOMENON, 1060 AL	(SC)
JAM	36	533	69 34*KARNES, C.H.	E/P WAVES, 6061-T6 AL BARS	(SL)
JAP	40	2967	69 83*KARNES, C.H.	DYNAMIC COMPACTION OF POROUS IRON	(SC)
RMP	24	28	52 54 KATZ, L.	RANGE ENERGY RELATIONS	(USASK)
JAP	30	558	59 78 KATZ, S.	EXPT-HUGONIOT OF AL, STEEL	(SRI)
JASA	36	653	64 33 KAUL, R.K.	WAVES IN CIRCULAR ELASTIC ROD	(IBM)
JPCS	30	2091	69 76*KEELER, R.N.	COMPRESSIBILITY, ALKALI METALS	(LRL)
ACADE(BK)		51	71 18 KEELER, R.N.	SW IN SOLIDS-EXPT METHS (IN CALDIROLA)	
JAP	34	172	63 43 KELLER, D.V.	SPALL MECHANISM IN LUCITE	(BOEIN)
NORT	ARD-66-31R	66	52 KELLER, D.V.	SW IN SOLIDS, FOAMS	AD636271
NSE	27	190	67 55*KELLER, F.L.	E-TRANSPORT THEORY	
JMPS	18	397	70 15*KELLY, J.M.	T EFFECTS, SW IN VISCOPL SOLIDS	(UKENT)
PREVL	16	608	66 65*KENNEDY, G.C.	NEW MELT LAW AT HIGH P	(UCLA)
PREV	151	668	66 65*KENNEDY, G.C.	NEW MELT LAW AT HIGH P	(UCLA)
JGR	73	2795	68 76*KENNEDY, G.C.	MELT CURVES, LI, NA, K, RB TO 80 KBAR	(UCLA)
JPCS	30	2091	69 76*KENNEDY, G.C.	COMPRESSIBILITY, ALKALI METALS	(LRL)
JPCS	31	2329	70 74*KENNEDY, G.C.	COMPRESSIB, 18 METALS TO 45 KBAR	(UCLA)
JPCS	32	2545	71 76*KENNEDY, G.C.	ALKALI METALS TO 45 KBAR	(UCLA)
JPCS	33	1377	72 74*KENNEDY, G.C.	22 ELEMENTS TO 45 KBAR	(UCLA)
JAM	36	470	69 34 KENNEDY, L.W.	CIRCULAR END-LOADED BAR	(SL)
PREV	145	164	66 54 KESSARIS, N.D	E-BEAM IN WATER	
JAP	38	2923	67 66 KEY, S.W.	G TENSOR, ANISOTROPIC MATERIALS	(SC)
PPS	81	751	63 54*KING, D.E.N.	E PENETRATION, LUMINESCENT MTRLS	(BIRKB)
ACADE BK		579	70 16 KINSLOW, R.	HIGH-VELOC IMPACT PHENOM	TA418.34.H5
JRNBS	71A	363	67 100 KIRBY, R.K.	THERMAL EXP, RUTILE, 100-700 °	(NBS)
SSS	SR-267	70	110*KIRSCH, J.W.	STRESS EFFECTS, POROUS EAR...	AD712852

NOLTR 72-274

JCM	5	428	71	41*KIRSCH,J.W.	HUGONIOT ANALYSIS,COMPOSITES (TINC)	(SSS)
JCM	5	439	71	39*KIRSCH,J.W.	FIND ERROR IN TORVIK EQUATION	
DNA		27251	71	41*KIRSCH,J.W.	WAVES,POROUS GEOLOGIC COMPOSITES	AD732023
AOPT	5	1922	66	54 KLEIN,C.A.	E-BEAM EXCITATION,LASER CRYSTALS	(RAYTH)
ACADE BK			71	18*KNOEPFEL,H.	PHYSICS OF HIGH ENERGY DENSITY (ISP 48;	
JASA	36	681	64	42 KNOLLMAN,G.C	WAVES, RANDOM SPHERICAL INHOMOG	(LMSC)
RMP	30	1178	58	4 KNOPOFF,L.	ATTEN,SMALL WAVES IN SOLIDS	(UCLA)
ACADE(BK)		227	63	64 KNOPOFF,L.	EQNS STATE,MODERATE P (IN BRADLEY V1,63)	
ACADE(BK)		247	63	64 KNOPOFF,L.	EQNS STATE,ULTRA-HI P (IN BRADLEY V1,63)	
JGR	74	1435	69	68*KNOPOFF,L.	SW TO ISOTHERMAL EQN STATE	(UCLA)
JGR	74	1439	69	68 KNOPOFF,L.	G PARAMETER AND EQNS OF STATE	(UCLA)
ASME (BK)			69	13 KNOPOFF,L.	ELAST WAVE IN WEDGE (IN MIKLOWITZ)	
JASA	35	5	63	5*KOBETT,D.R.	ELASTIC WAVE INTERACTION	(MRI)
JETP	15	477	62	63*KOLESNIKOVA	COMPRESSION OF POROUS AL,CU,PB,NI	(USSR)
PSS	18	265	66	95*KOLIWAD,K.M.	ELAST CONSTS, ALKALI HALIDES	(CORNU)
PSS	21	507	67	95 KOLIWAD,K.M.	P DERIVS,ELAST CONSTS, NABR,KF	(CORNU)
DOVER BK		213	53	47 KOLSKY,H.	STRESS WAVES IN SOLIDS	
PHILM	45	712	54	32 KOLSKY,H.	EXPTS-ELAST WAVES IN BARS	(GTBRI)
JMPS	10	195	62	52 KOLSKY,H.	EXPTS-PLASTIC WAVES	(ARDE)
JGR	68	1193	63	5 KOLSKY,H.	STRESS WAVES IN INELASTIC SOLIDS	(BROWN)
PERGA(BK)		233	60	47 KOLSKY,H.	EXPTS-WAVES,SOLIDS(1ST NAVAL STRUCT SYMP)	
CESW	1	39	65	33 KONSTANTINOV	WAVE PROPAG, FINITE BAR	
DOKLA	10	338	65	63 KOPYSHEV,U.	G IN THOMAS-FERMI APPROX	(USSR)
DOKLA	3	938	58	102*KORMER,S.B.	T, SP HT OF PLEXIGLAS	(USSR)
DOKLA	5	317	60	63 KORMER,S.B.	INTERPOL EQN STATE, METALS	(USSR)
JETP	15	477	62	63 KORMER,S.B.	COMPRESSION OF POROUS AL,CU,PB,NI	(USSR)
JETP	20	811	65	96 KORMER,S.B.	5 HALIDES TO 5 MBAR	(USSR)
JETP	21	689	65	96 KORMER,S.B.	SW+ NaCl,KCl TO 700 KBAR	(USSR)
USPEK	11	229	68	47 KORMER,S.B.	OPTICAL STUDY, SHOCKED DIELECTRICS	(USSR)
JCP	5	517	70	15*KOZIN,N.S.	HYDRODYN EFFECTS,COLLIDING SOLIDS	(USSR)
USPEK	13	778	71	17*KRASILNIKOV	NONLIN PHENOMENA IN ELASTIC WAVES	(USSR)
JAP	40	3207	69	68 KRATOCHVIL,J	THERMODYN OF E-P MTRLS	(UKENT)
JAP	42	1104	71	70 KRATOCHVIL,J	FINITE-STRAIN THEORY	
PREVL	16	608	66	65 KRAUT,E.A.	NEW MELT LAW AT HIGH P	(UCLA)
PREV	151	668	66	65 KRAUT,E.A.	NEW MELT LAW AT HIGH P	(UCLA)
AFML TR	68-266	68		30*KREYENHAGEN	2D STEEP CODE- IMPACT	AD683055
AIAAJ	8	2147	70	28 KREYENHAGEN	SHAPE CALCS, IMPACT, LAMINATE	(SHI)
JAP	37	4737	66	76*KRIMSKY,S.	HUGONIOT EQN STATE, ALKALI METALS	(GCA)
JETP	34	614	58	74*KRUPNIKOV,K.	METALS 400-4000 KBAR	(USSR)
JETP	15	470	62	88 KRUPNIKOV,K.	SHOCK COMPRESSION, POROUS TUNGSTEN	(USSR)
JETP	15	470	62	88*KRUPNIKOVA,V	SHOCK COMPRESSION, POROUS TUNGSTEN	(USSR)
DOKLA	3	938	58	102*KURIPIN,A.I	T, SP HT OF PLEXIGLAS	(USSR)
JAP	40	893	69	79 KUSUBOV,A.S.	DYNAM YIELD, 2024-T4 AL AT 313 KBAR	(LRL)
JAP	40	3776	69	79 KUSUBOV,A.S.	UNLOADING WAVES, 2024-T4 AL	(LRL)
JGR	76	518	71	111*LAGUS,P.L.	EQN STATE OF FORSTERITE	(CIT)
JASA	30	308	58	48*LAMB,J.	ULTRASONIC VELOC MEAS IN SOLIDS	(IMPER)
JAP	40	1768	69	102*LAMBERSON,D.	SOUND SPEED VS P,T IN PMMA	(AFWL)
JAP	43	976	72	103 LAMBERSON,D.	EQN STATE,POLYSTYRENE,PMMA	(AFWL)
PRS	103	622	23	31 LANDON,J.W.	EXPTS WITH HOPKINSON BAR	
JAP	39	3931	68	104*LANE,F.O.	CALC,ELAST CONSTS, ALPHA QUARTZ	(SL)

KN	70-760(R)	70	38*LARRABEE,A.D	WAVES IN COMPOSITES	(KN)
SC	DR-68-885	68	73 LAWRENCE,R.	DYNAMIC MTRL PROPERTY LIBRARY	(SL)
SC	RR 70-471	70	23*LAWRENCE,R.	STRAIN RATE EFFECTS FOR WONDY	(SL)
JPCS	28	939 67	92*LAWSON,A.W.	T,P DEPEND,ELAS CONSTS,TLBR	(CALUR)
PREV	76	545 49	77 LAZARUS,D.	ELAST CONSTS VS P-KCL,NACL,CUZN,CU,AL	
JAM	18	379 51	4 LEE ,E.H.	PLASTIC-WAVE PROPAG EFFECTS	(BROWN)
JAM	21	63 54	4 LEE ,E.H.	STEEL CYL HITTING RIGID TARGET	(BROWN)
JAM	34	931 67	10 LEE ,E.H.	PLANE E-P WAVES AT FINITE STRAIN	(STANU)
JAP	38	19 67	10 LEE ,E.H.	FINITE-STRAIN E-P THEORY	(STANU)
ASME (BK)		69	13 LEE ,E.H.	PLASTIC WAVE ANALYSIS (IN MIKLOWITZ)	
JAM	36	1 69	14 LEE ,E.H.	E/P DEFORMATION,FINITE STRAIN	(STANU)
JAM	36	497 69	38*LEE ,E.H.	WAVE FRONT ANALYSIS	(UILL)
AIAAJ	8	1421 70	97 LEE ,L.M.	PROPS OF DISTENDED CARBONS	(SL)
BAPS	14	386 69	59*LEHTO,D.L.	(ABST)MANG PROP CHANGES,LASER IRRAD	(NOL)
SOLSP	12	275 61	64 LEIBFRIED,G.	ANHARMONIC WAVES IN CRYSTALS	
WILEY BK		66	58 LENGYEL,B.A.	INTRO-LASER PHYSICS	
UCRL	50442	68	55*LENT,E.M.	FORWARD BREMSSTRAHLUNG	
AMSTO	22	571 70	16 LEPIK,U.	PLANE SHOCK IN A THICK PLATE	(POLAN)
JAP	39	3328 68	59*LEROI,G.E.	LASER-CAUSED CHARGED PARTICLES	
JMPS	7	77 59	4 LESSEN,M.	THERMOELASTIC SHOCK	(UPENN)
NCSU TR	70- 11	70	80 LIDDELL,W.L.	EXPT-PLASTIC WAVES, 1100F ALUMINUMAD717328	
JIMA		269 65	37 LIGHTHILL,M.	WAVES,NONLIN DISPERSIVE SYSTEMS	
PSS	18	265 66	95 LINCOLN,R.C.	ELAST CONSTS, ALKALI HALIDES	(CORNU)
ACADE(BK)		229 66	9*LINDE,R.K.	SHOCK EFFECTS IN SOLIDS	(SRI)
RSI	37	1 66	50 LINDE,R.K.	EXPTS-RESP OF SHOCKED MTRLS	(SRI)
JAP	37	3259 66	89 LINDE,R.K.	SW PROPAG,POROUS SOLIDS	(SRI)
JAP	43	3367 72	91 LINDE,R.K.	POROUS CU,FE,U,POLYURETHANE	(SRI)
JAM		135 65	33 LINDHOLM,U.S	WAVES, CONTINUOUSLY NONHOMOG BAR	(SRI)
JAM		441 68	11*LINDHOLM,U.S	TEMP GRAD EFFECTS ON E-P WAVE	AD580497
IEEE NS-		250 69	55 LITTLE,R.	PULSED E-BEAM DEPOSITION	
JAP	38	19 67	10*LIU ,D.T.	FINITE-STRAIN E-P THEORY	(STANU)
AIAAJ	7	2158 69	34*LIU ,T.H.	DYN RESPONSE, FINITE BARS	(GIT)
JAP	41	678 70	56 LONERGAN,J.A	4.P MEV ELECTRONS THRU BE,AL,AU	(GA)
JAP	36	1620 65	84 LORD,A.E.	ELAST COEFFS, IRON, T=77-573 K	(BROWN)
IJMS	11	1 69	13*LOWELL,S.C.	FINITE WAVES IN LATTICES	(WSU)
JGR	76	513 71	111*LOWER,J.H.	EQN STATE OF FORSTERITE	(CIT)
JAP	36	2189 65	88 LOWRIE,R.L.	ELAST PROPS,TUNGSTEN,T=24-1800 C	(UCRI)
JMPS	12	59 64	33 LUBLINER,J.	STRAIN-RATE DEPEND WAVES IN BARS	(UCBER)
SOLSP	12	275 61	64*LUDWIG,W.	ANHARMONIC WAVES IN CRYSTALS	
JGR	73	2795 68	76 LUEDEMANN,H.	MELT CURVES, LI,NA, ,RB TO 80 KBAR	(UCLA)
JAP	34	2046 63	78 LUNDERGAN,C.	EQN STATE 6061-T6 ALUMINUM AT LOW P	(SC)
JAP	35	1203 64	78*LUNDERGAN,C.	DYNAMIC RESPONSE OF AL	(SC)
JAP	42	669 71	36 LUNDERGAN,C.	WAVES IN LAMINATED COMPOSITE	(SL)
JAP	42	4148 71	36 LUNDERGAN,C.	WAVES IN LAMINATED COMPOSITES	(SL)
JAP	39	5488 68	83 LYSNE,P.C.	SHOCK COMPRESS,POROUS IRON	(SL)
JAP	40	3786 69	51 LYSNE,P.C.	RELEASE ADIABAT EXPTS	(SL)
JAP	41	351 70	90 LYSNE,P.C.	RELEASE WAVES, POROUS CARBON	(SL)
JAP	42	2152 71	90 LYSNE,P.C.	SHOCK LOADING, POROUS MTRLS	(SL)
PHYSR	89	832 53	62*MACDONALD,D.	THERMAL EXPAN OF SOLIDS	(NRC)
RMP	30	1178 58	4*MACDONALD,G.	ATTEN,SMALL WAVES IN SOLIDS	(MIT)
PPS	63B	2 50	42 MACKENZIE,J.	SOLID CONTAINING SPHERICAL HOLES	(UBRIS)

NOLTR 72-274

LASL	LA	3578	67	27	MADER, C.L.	1D E-P CALCS FOR AL	N6737949
LASL	LA	3720	67	27	MADER, C.L.	SIN-1D CODE, ELASTIC-PLASTIC	
JAP	38	3271	67	43*	MADER, C.L.	DETERMINING DYNAMIC TENSILE PROPS	(LASL)
LASL	LA	4059	68	91	MADER, C.L.	EQN STATE, SHOCKED POLYURETHANE FOAM	(LASL)
ACADE(BK)		181	64	25	MAENCHEN, G.	TENSOR CODE (IN ALDER 64 VOL 3)	
JAP	37	3493	66	75*	MAIDEN, C.J.	LIGHT GAS GUN HUGONIOTS	(GMDRL)
JAP	26	555	55	77	MALLORY, H.D.	SW PROPAG IN AL	(NOL)
JAM	18	203	51	32	MALVERN, L.E.	WAVES IN BAR WITH STRAIN-RATE EFFECT	(CIT)
QAM	8	405	51	32	MALVERN, L.E.	PLASTIC WAVE IN BAR	
IJMS	11	1	69	13	MANVI, R.	FINITE WAVES IN LATTICES	(WSU)
JGR	75	7508	70	69	MAO, N.H.	EMPIRICAL EQN OF STATE	(HARVU)
CESW	1	39	65	33*	MARCHENKO, L.	WAVE PROPAG, FINITE BAR	
INTER	BK		69	109	MARK, H.	MATTER UNDER UNUSUAL CONDITIONS	
JAP	31	1253	60	73*	MARSH, S.P.	EQN OF STATE, 19 METALS	(LASL)
JAP	33	654	62	81*	MARSH, S.P.	ULTIMATE YIELD STRENGTH, CU	(LASL)
JGR	69	2947	64	105*	MARSH, S.P.	COMPOS OF EARTHS INTERIOR	(LASL)
JGR	72	4999	67	107*	MARSH, S.P.	HUGONIOT FOR 12 ROCKS	(LASL)
ACADE(BK)		293	70	74*	MARSH, S.P.	EQN OF STATE FROM SW WORK (IN KINSLOW)	
NOL	TR	63-141	63	77*	MARSHALL, J.	STRESS WAVES IN AL	(NOL)
JGR	76	1370	71	70*	MARTINOV, E.D.	PLASTICITY RESULTING FROM PRESSURE	(USSR)
SC	DR-68-885	68		73*	MASON, D.S.	DYNAMIC MTRL PROPERTY LIBRARY	(SL)
SC	RR 70-471	70		23*	MASON, D.S.	STRAIN RATE EFFECTS FOR WONDY	(SL)
JAP	19	940	48	3	MASON, W.P.	SOUND WAVES IN METALS	(BELLT)
JASA	36	644	64	98	MASON, W.P.	ULTRASONIC WAVES IN SI, GE	(BELLT)
ACADE	BK		64	8	MASON, W.P.	PHYSICAL ACOUSTICS VOL 1 PT A	
JAP	42	5335	71	70	MATHUR, S.S.	ELAST CONSTS, AL, CU, NI	(INDIA)
ASR	15	137	65	64	MATIN, S.A.	CONSTIT REL, COMPRESSIBLE PLAST MTRL	(MIT)
JAP	39	4555	68	77*	MAXWELL, D.E.	SHOCK COMPRESS, POROUS AL (CALC)	(PIC)
NASA	CR-115350	71		25	MAXWELL, D.E.	HYPERVEL IMPACT CRATER CALCS	N7216248
AIAAJ	8	1421	70	97*	MAY, R.P.	PROPS OF DISTENDED CARBONS	(SL)
JAP	43	962	72	103*	MAY, R.P.	DATA, 3 EPOXY-RESIN SYSTEMS	(SL)
PHILM	12	157	65	98*	MCCAMMON, R.O.	GE, SI THERMAL EXPAN AT LOW TEMP	(AUSTR)
RAND	RM	3905	64	63	MCCLOSKEY, D.	ANALYTIC FORMULATION EQST FOR METALS	(RAND)
JAP	39	5541	68	59*	MCCLOSKEY, D.	LASE?-INDUCED STRESS WAVES	
JASA	36	653	64	33*	MCCOY, J.J.	WAVES IN CIRCULAR ELASTIC ROD	(IBM)
AFWL	TR	65-15	65	7	MCDOWELL, E.	DEVIATORIC EFFECTS, STRESS WAVES	AD620334
JAP	39	6104	68	79	MCKENNA, P.	V DEPENDENCE OF G FOR ALUMINUM	(NOL)
JGR	76	2780	71	70	MCLACHLAN, D.	P EFFECT OF METAL MELTING TEMP	(OSU)
JAP	42	3463	71	57*	MCLEAN, F.B.	1D RESPONSE TO E-BEAM PULSE	(HDL)
JAP	42	3474	71	57	MCLEAN, F.B.	TEMP-DEPENDENCE, SI, GE, INSB, E-BEAM	(HDL)
PHYSR108		196	57	73*	MCQUEEN, R.G.	SW COMPRESSION OF 27 METALS	(LASL)
ACADE(BK)		1	58	73*	MCQUEEN, R.G.	COMPRESSION SOLIDS BY SW (IN SEITZ VOL 6)	
JAP	31	1253	60	73	MCQUEEN, R.G.	EQN OF STATE, 19 METALS	(LASL)
JAP	33	654	62	81	MCQUEEN, R.G.	ULTIMATE YIELD STRENGTH, CU	(LASL)
GORDO(BK)		44	64	47	MCQUEEN, R.G.	LAB METHS, VERY HI-P, BEHAV OF METALS	(LASL)
JGR	69	2947	64	105	MCQUEEN, R.G.	COMPOS OF EARTHS INTERIOR	(LASL)
JGR	72	4999	67	107	MCQUEEN, R.G.	HUGONIOT FOR 12 ROCKS	(LASL)
LASL	LA	4340	70	90	MCQUEEN, R.G.	LOW-DENSITY CARBON	AD702446
ACADE(BK)		293	70	16	MCQUEEN, R.G.	EQN OF STATE FROM SW WORK (IN KINSLOW)	
JAP	19	940	48	3*	MCSKIMIN, H.J.	SOUND WAVES IN METALS	(BELLT)

JASA	22	413	50	48	MCSKIMIN, H.J	ULTRASONIC TECHNS, SMALL SPECIMENS	(BELLT)
JASA	30	314	58	98	MCSKIMIN, H.J	GERMANIUM ELAST MODULI TO 50 KPSI	(BELLT)
JASA	33	12	61	48	MCSKIMIN, H.J	ULTRASONIC PULSE SUPERPOS METHOD	(BELLT)
JASA	34	609	62	48	MCSKIMIN, H.J	ULTRASONIC PULSE METHOD	(BELLT)
ACADE(BK)		272	64	48	MCSKIMIN, H.J	ULTRASONIC METHS (IN MASON VIA, 64)	(BELLT)
JAP	36	1624	65	104	MCSKIMIN, H.J	ELAST MODULI, QUARTZ VS P	(BELLT)
JASA	41	1052	67	48	MCSKIMIN, H.J	ULTRASONIC WAVE MEASUREMENTS	(BELLT)
JAP	43	2944	72	93	MCSKIMIN, H.J	ELASTIC MODULI, DIAMOND	(BELLT)
JAP	38	347	67	104	MCWHAN, D.B.	COMPR ALPHA-QUARTZ TO 150 KBAR	(BELLT)
AIAAJ	4	112	66	9	MEHTA, P.K.	DIRECT CALC, CYL, SPH ELASTIC WAVES	
AIAAJ	9	1887	71	17	MEHTA, P.K.	CORRECTIONS TO AIAAJ 4, 112(66)	(PERKI)
BRL	MR	2058	70	94*	MELANI, A.	HUGONIOT OF LIF CRYSTAL	AD712329
JAP	41	678	70	56*	MERKEL, G.	4, 8 MEV ELECTRONS THRU SE, AL, AU	(GA)
JMPS	12	77	64	46	MEYER, M.L.	SPHERICAL FIELDS IN SOLIDS	(USHEF)
JAM	24	231	57	32	MIKLOWITZ, J.	WAVES, DISPERSIVE ROD. I. THEORY	(NOTS)
JAM	24	240	57	33	MIKLOWITZ, J.	WAVES, DISPERSIVE ROD. II. EXPTS	(NOTS)
AHR	13	865	60	6	MIKLOWITZ, J.	ELASTIC WAVE PROPAGATION	(CIT)
JGR	68	1190	63	33	MIKLOWITZ, J.	WAVES IN ELASTIC RODS, PLATES	
ASME	BK	183	69	13	MIKLOWITZ, J.	WAVE PROPAG, SOLIDS	QC176.8W3W3
ASME	(BK)		69	13	MIKLOWITZ, J.	ELASTIC WAVEGUIDE WITH EDGE (IN MIKLOWITZ)	
IEEE	NS-14	245	67	55	MILLER, D.	PULSED ENERGY SPECTROMETER	
JPCS	25	1279	64	95	MILLER, R.A.	P DERIVS, ELAST CONSTS, LIF, NAF	(CIT)
AIAAJ	3	742	65	102	MILLS, E.J.	HUGONIOTS FOR PLASTICS	(BMI)
PREV	75	1552	49	32*	MIMS, R.L.	ELASTIC PULSES IN METAL RODS	(UTEX)
PIAS	59	21	64	36	MISHRA, S.K.	SOUND IN SEMI-INF STRATIFIED MEDIUM	(INDIA)
PREVB	2	2167	70	95*	MITRA, S.S.	LATTICE DYN, CS HALIDES	(URI)
PREVB	3	4398	71	95*	MITRA, S.S.	LATTICE DYN, ALKALI HALIDES	(URI)
JGR	76	1255	70	111	MOGI, K.	EXPTS-TRIAXIAL COMPRESSION, ROCKS	(UTOKY)
NASA	CR-115350	71		25*	MOISES, H.	HYPERVEL IMPACT CRATER CALCS	N7216248
BRL	R	1357	67	45	MOK, C.H.	EXPANSION SPH CAV, E-P MATERIAL	AD654369
JAP	39	2072	68	45	MOK, C.H.	SOLID STR EFFECTS, SPH, PLANE SW	(BRL)
AJP	36	822	68	34*	MOLLOU, B.R.	LONGIT VIBRATIONS, ELASTIC ROD	(BRANU)
RAND	RM	6139	70	39	MOON, F.C.	WAVES IN COMPOSITE WITH SPHERES	AD718087
PRINU	TR-27	71		41*	MOON, F.G.	ELASTIC WAVES IN FIBER COMPOSITES	AD731833
AIAAJ	9	1492	71	40*	MOON, F.C.	STRESS WAVES IN COMPOSITE RODS	(UKENT)
JCP	54	4239	71	103*	MOPSIK, F.I.	G CALC FOR N-ALKANES	(NBS)
AFWL	TR 65-117	65		78	MORGAN, D.T.	G FOR AL, TEFLON	AD624320
PTRS	251	341	59	3	MORLAND, L.W.	PLANE IRROT WAVES, EP MEDIUM	
UCAL	TR	23	68	60	MORLAND, L.W.	LASER-INDUCED YIELD, WAVES	AD676324
UCAL	TR	24	68	50	MORLAND, L.W.	PLASTIC YIELD WAVES, LASER IRRAD	AD678381
AIAAJ	6	1063	68	9	MORLAND, L.W.	STRESS WAVES FROM RADIATION	
PTRSL	264	457	69	13	MORLAND, L.W.	SOLNS TO UNIAXIAL E/P WAVES	AD691620
JMPS	17	371	69	45	MORLAND, L.W.	SPH WAVE, E/P MTRLS	(UEA)
JMPS	9	295	70	46	MORLAND, L.W.	SPHERICAL UNLOADING PROBLEM	(UEA)
JGR	76	7062	71	111	MORLAND, L.W.	FINITE DEFORM PLASTICITY THEORY	(SSS)
JGR	77	890	72	41	MORLAND, L.W.	THEORY-FLUID SATUR POROUS SOLID	(SSS)
JPCS	28	939	67	92	MORSE, G.E.	T, P DEPEND, ELAS CONSTS, TLBR	(CALUR)
JAP	40	4920	69	82*	MOTE, J.D.	SW-INDUCED YIELDING IN CU CRYSTALS	(SL)
JAM	34	745	67	10*	MORTIMER, R.W	1D ELAST WAVES BY CHARACTERISTICS	(DIT)
RAND	RM	6139	70	39*	MOW, C.C.	WAVES IN COMPOSITE WITH SPHERES	AD718087
LASL	LA	4013	68	44*	MUDD, W.L.	SPALL CRITERIA FOR NUMERICAL CALCS	(LASL)
PHILM	26	489	72	72*	MUIR, H.	BAUSCHINGER EFFECT, DISCONTIN YIELDING	

JIMA	3	21	67	37 MULHERN, J.F.	COATED ELASTIC FIBER	(UNOFF)
IJES	7	129	69	38 MULHERN, J.F.	CONTINUUM THEORY, E/P FIBRE-REINF MTRL	
ACADE(BK)		11	63	47 MUNRO, D.C.	HI-P METHODS (IN BRADLEY V1, 1963)	(ULEED)
DETSYM	4	295	65	7*MUNSON, D.E.	LP WAVE PROPAGATION	(SC)
JAP	37	1652	66	78 MUNSON, D.E.	P-V FOR AL, CU, PB	(SC)
JCM	5	286	71	36 MUNSON, D.E.	WAVES IN LAMINATES, MIXTURES	(SL)
JAP	43	962	72	103 MUNSON, D.E.	DATA, 3 EPOXY-RESIN SYSTEMS	(SL)
JAP	42	387	71	55*MURATA, K.	MONTE CARLO CALCS	(OSAKA)
PSAM	1	158	49	3 MURNAGHAN, F.	FOUNDATIONS OF THEORY OF ELASTICITY	(JHU)
WILEY BK		140	51	3 MURNAGHAN, F.	FINITE DEFORMATION OF ELASTIC SOLID	
JGR	75	2063	70	110*MURRI, W.J.	HUGON, RELEASE ADIABATS FOR ROCKS	(SRI)
RPP	22	74	59	3 MUSGRAVE, M.	ELASTIC WAVES IN CRYSTALS	
AFOSR	68-1552	68		43 NACHBAR, W.	THERMAL SHOCK, ELASTIC METALS	AD675645
JGR	70	3951	65	100*NAFE, J.E.	BLK MOD-V RELATION, OXIDES	(BELLT)
ARMA	18	251	65	64*NAGHDI, P.M.	GENERAL THEORY-EP CONTINUUM	(NEWCA)
CALUB			69	13 NAGHDI, P.M.	ACCEL WAVES IN E/P MTRLS	AD695960
JJAP	2	743	63	54 NAKAI, Y.	E-BEAM DEPOSITION	
CRREL RR		279	70	16 NAKANO, T.	CALC, SHOCK DIFFRACTION, CAVITY	AD702906
PREVB	2	2167	70	95*NAMJOSHI, K.V	LATTICE DYN, CS HALIDES	(URI)
PREVB	3	4398	71	95 NAMJOSHI, K.V	LATTICE DYN, ALKALI HALIDES	(URI)
STANU		184	68	11 NAN, N.	E-P WAVES FOR COMBINED STRESSES	AD678480
IJNLM	6	615	71	17*NARIBOLI, G.A	VISCO-ELASTIC WAVES	(IOWAS)
NASA TN	D-5892	70		80 NAUMANN, R.J.	HIGH-T AL EQN OF STATE	
JAP	42	4945	71	83 NAUMANN, R.J	EQN STATE POROUS SHOCKED METALS	(MSFC)
JAM	39	696	72	19 NAYFEH, A.H.	ELAST WAVES, INHOMOG MEDIA	(UCASD)
JPCS	7	58	58	75*NEIGHBOURS, J	ELAST CONSTS, ZINC, 4.2-670 K	(FORD)
JAP	32	3224	62	50*NEILSON, F.W.	DYNAMIC YIELD, QUARTZ GAGE	(SC)
JAP	36	1775	65	50*NEILSON, F.W.	QUARTZ SUBMITTOSCOND STRESS GAGE	(SL)
JAM	39	696	72	19*NEMAT-NASSER	ELAST WAVES, INHOMOG MEDIA	(UCASD)
EMECH		278	72	42 NEVILL, G.E.	ID WAVES, STEEL+EPOXY EXPTS	(UFLA)
SPSS	12	1312	70	92*NIKANOROV, S.	T DEPEND, ELAST CONSTS OF TE	
JAM	24	240	57	33*NIJEWANGER, C	WAVES, DIFFUSIVE ROD, II. EXPTS	(NOTS)
ARMA	13	167	63	64*NOLL, W.	TD OF MT. WITH HEAT COND, VISC	(JHU)
JGR	76	7052	71	100 NOTIS, M.R.	ELAST MOD JULI-SINTERED NI OXIDE	(LEHIG)
JETP	13	1321	61	83*NOVIKOV, S.A.	RAREFACTION SHOCKS IN IRON, STEEL	(USSR)
SOVPHS	5	191	63	83*NOVIKOV, S.A.	F-P WAVES IN IRON, STEEL	(USSR)
SC	RR 70-428	70		60 NUNZIATO, J.	RAG-GEN WAVE PROPAG	(SL)
JGR	76	5732	71	111 OBERBECK, V.	HE SIMUL OF IMPACT CRATERS	(AMES)
JGR	75	1947	70	82 OKEEFFE, D.J.	P, V, T RELATIONS FOR COPPER	(NOL)
JAP	41	2743	70	15*OKEEFFE, D.J.	ELASTIC RELIEF WAVES IN AL, CU	(NOL)
JAP	41	5101	70	20 OKEEFFE, D.J.	P EFFECTS, THERMAL EXPANSION	(NOL)
JAP	42	888	71	82 OKEEFFE, D.J.	SHOCK STATES OF POROUS CU	(NOL)
PRS A200		523	50	62 OLDROYD, J.G.	RHEOLOGICAL EQNS OF STATE	
JGR	77	2496	72	112*OLINGER, B.	GARNET TO 100 KBAR	(LASL)
SC	RR-69-596	70		15*OLIVER, M.L.	CALCS, ATTENUATION OF TRIANGULAR PULSE	(SL)
BMI	197A-4-3	68		43 OSCARSON, J.	SPALL FRACTURE, RESPONSE	AD669440
PERGA BK			65	30 OSTRACH, S.	DEVELOPMENTS IN MECHANICS, VOL 2 PT 2	
IEEEENS	13	63	66	57 OSWALD, R.B.	SI, GE FRACTURE IN E-BEAM	(HDL)
APLET	13	279	68	57 OSWALD, R.B.	RESPONSE SOLIDS TO PULSED E-BEAM	(HDL)
APLET	16	24	70	57 OSWALD, R.B.	G FROM PULSED E-BEAM LOADING	(HDL)
JAP	42	3474	71	57*OSWALD, R.B.	TEMP-DEPENDENCE, SI, GE, INSB, E-BEAM	(HDL)

NOLTR 72-274

JAP	42	3463	71	57	OSWALD, R.B.	1D RESPONSE TO E-BEAM PULSE	(HDL)
IEEE NS-		250	69	55*	OTTESON, J.	PULSED E-BEAM DEPOSITION	
PHYSR	98	969	55	62	OVERTON, W.C.	T VAR, ELAST CONSTS, CUBIC CRYSTS	(NRL)
PPS	60		1	48	85	PACK, D.C.	SW IN STEEL AND LEAD (ARA)
EXPME	12	83	72	41	PAO, Y.H.	RECENT WORK-WAVES IN SOLIDS	(CORNU)
JASA	35	521	63	97	PAPADAKIS, E.	ELAST MODULI, PYROLYTIC GRAPHITE	(MANLA)
JAM	11	A65	44	31*	PARKER, E.R.	EXPTS-DYNAMIC STRESS AND STRAIN	(GE)
IJNLM	4		7	69	68	PARKS, V.J.	NATURAL STRESS (CU)
GORDO	BK		64	47*	PARLEE, N.A.	D METALLURGY AT HIGH P, T	
JAP	43	1605	72	19	PASKIN, A.	CALCS, SHOCKS IN 3-D SOLIDS	
JAP	35	3407	64	63	PASTINE, D.J.	EQN OF STATE, FCC METALS	(NOL)
PHYSR	138	A767	65	63	PASTINE, D.J.	GRUNEISEN PARAM, MONATOMIC CUBIC CRYSTALS	
PHYSR	148	748	66	65	PASTINE, D.J.	THERMAL EXP, STRUCT, ANISO MONAT SOLIDS	(NOL)
JPCS	28	522	66	76	PASTINE, D.J.	THERMAL CONTRIBS, ELASTIC CONSTS NA	(NOL)
JPCS	27	1783	66	20	PASTINE, D.J.	CURVATURE IN VELOC RELATION, METALS	(NOL)
PRLET	18	1187	67	76	PASTINE, D.J.	PVET EQN STATE, METALLIC SODIUM	(NOL)
PRLET	21	1582	68	67	PASTINE, D.J.	VOLUME DEPENDENCE OF GRUNEISEN PARAM	(NOL)
JAP	39	5104	68	79*	PASTINE, D.J.	V DEPENDENCE OF G FOR ALUMINUM	(NOL)
JCP	49	3012	68	67	PASTINE, D.J.	P, V, T EQN OF STATE FOR POLYETHYLENE	(NOL)
PHYSR	175	905	68	67	PASTINE, D.J.	TD PROPS, NA, ANHARMONIC CONTRIB	(NOL)
JAP	40	440	69	20	PASTINE, D.J.	INTERPOLATION-US VS UP RELATION	(NOL)
JAP	41	2743	70	15	PASTINE, D.J.	ELASTIC RELIEF WAVES IN AL, CU	(NOL)
JAP	41	3144	70	77	PASTINE, D.J.	THEO SW PROPS, POROUS AL	(NOL)
JAP	41	5085	70	103	PASTINE, D.J.	V DEP, THERMAL EXPAN, POLYMERS	(NOL)
JGR	75	7421	70	69	PASTINE, D.J.	ACCURACY, WACHTMAN-ANDERSON RELATION	(NOL)
AIAAJ	9	1887	71	17*	PATEL, N.T.	CORRECTIONS TO AIAAJ 4, 112(65)	(PERK)
MCGRA	BK		63	52	PAUL, W.	SOLIDS UNDER PRESSURE	(HARVU)
SOVPJ	10	35	67	76	PAVLOV, S.D.	THEORY, K, RB, CE EQN OF STATE	(USSR)
JASA	35	525	63	90	PAYTON, R.G.	SW, SOLID AND COMPACTIBLE MEDIA	(AVCO)
QJMAM	19	83	66	34	PAYTON, R.G.	ELAST WAVES, NONHOMOG ROD	(ADELP)
DOVER	BK	256	54	47*	PEARSON, J.C.	METALS UNDER IMPULSIVE LOADS	
PICAT			66	9	PEARSON, J.C.	PLANE SHOCKS IN METALS	AD634630
JAM	36	479	69	35	PECK, J.C.	DISPERSIVE PULSE, COMPOSITE	(MCDON)
JAM	36	485	69	35*	PECK, J.C.	DISPERSIVE PULSE, COMPOSITE, EXPTS	(AEROS)
SAMSO	TR-69-102	69	35*	PECK, J.C.	DISPERSIVE PULSE PROPAGATION	AD685712	
APL	16	120	70	60	PEERCY, P.S.	ULTRAFAST RISE TIME STRESS WAVES	(SL)
RMP	24	28	52	54*	PENFOLD, A.S.	RANGE ENERGY RELATIONS	(USASK)
JAP	37	2304	66	33	PENNER, S.S.	LASER IRRAD OF SOLID BAR	
AFSWC	TDR-63-12	63	27*	PERCY, J.H.	INCLUDING MATERIAL STRENGTH	AD410386	
JCP	43	1381	65	93	PEREZ-ALBUE.	P EFFECT, COMPRESSIB OF 7 CRYSTALS	(UILL)
SC	RR-69-560	69	57	PERRY, F.C.	LASER INTERFEROMETER, MEASURE G	(SL)	
APL	17	478	70	57	PERRY, F.C.	E-BEAM INDUCED STRESS IN SOLIDS	(SL)
JAP	41	5017	70	57	PERRY, F.C.	RESPONSE OF METALS TO E-BEAM	(SL)
QAM	20	321	63	64	PERZYNA, P.	CONSTIT EQNS, PLASTIC MTRLs	(POLAN)
JGR	75	2063	70	110	PETERSON, C.	HUGON, RELEASE ADIABATS FOR ROCKS	(SRI)
JGR	74	2727	69	109*	PETERSON, C.	SHOCK COMPRESSION OF FELDSPARS	(CIT)
PRLET	1	402	58	78*	PETERSON, G.A.	SW COMPRESSION OF ALUMINUM	(SRI)
JCP	3	307	68	27	PETSCHEK, A.	DIFFCE EQNS, 2D ELASTIC FLOW	
NOL	TR 66-	42	66	43	PIACESI, R.	SPALLATION-EFFECT OF STRENGTH PROPAD	641874
JPCS	27	1783	66	20*	PIACESI, D.	CURVATURE IN VELOC RELATION, METALS	(NOL)
DASA		2495	70	29*	PIECHOCKI, J.	SHEP CALCS, HE IN AL	(SHI) AD708784

NOLTR 72-274

AIAAJ	8	2147	70	28*PIECHOCKI, J.	SHAPE CALCS, IMPACT, LAMINATE	(SHI)
JAP	13	503	42	31 PIPES, L.A.	OPERATIONAL THEORY, LONGIT IMPACT	(HARVU)
JAP	38	876	67	75*PITT, C.H.	DISLOC VELOC IN NI CRYSTAL	(UUTAH)
ACADE(BK)			70	16 POND, R.B.	IMPACT METALLURGY (IN KINSLOW 70)	
PREV	75	1552	49	32*PONDROM, W.L.	ELASTIC PULSES IN METAL RODS	(UTEX)
GEOPH	20	780	55	35 POSTMA, G.W.	WAVES IN STRATIFIED MEDIUM	(SHELL)
JAP	41	4913	70	104 POWELL, B.E.	4TH ORDER ELAST CONSTS-FUSED QUARTZ	
AFML	TR	70-295	70	80 PRATER, R.F.	IMPACT-AL ALLOYS	AD718461
BJAP	15	751	64	50*PRICE, J.H.	DYNAM P MEAS TO 300 KBAR	
BJAP	2	275	69	75*PRICE, J.H.	RELEASE PATHS, AL, MG TO 200 KB	(UKAEA)
JCP	43	1050	65	81 PRIETO, F.E.	COHESIVE ENERGY OF CU	(MEXIC)
JAP	41	3876	70	20 PRIETO, F.E.	EQN FOR THE SHOCK ADIABAT	(MEXIC)
JAP	42	296	71	20 PRIETO, F.E.	REDUCED HUGONIOTS	(MEXIC)
JPCS	33	797	72	72 PRIETO, F.E.	V DERIV OF G AT ZERO P	(UPARI)
AFML	TR	68-311	70	38*PUPPO, A.	MICRODYNAMICS, WAVE PROPAG (WHITT)	AD702108
JAP	42	4592	71	103 QUACH, A.	PVT PROPS, AMORPHOUS POLYMERS	
JPCS	26	1157	65	63*QUIGLEY, T.J.	TAITS LAW. I. ALKALI METALS	(CUNY)
PRS	103	622	23	31*QUINNEY, H.	EXPTS WITH HOPKINSON BAR	
ACADE(BK)			70	16 RAE, W.J.	CALCS-SHOCK FROM IMPACT (IN KINSLOW 70)	
AFWL	TR	65-115	65	29*RAINER, J.H.	GROUND MOTION, NUCLEAR BURSTS	AD475498
JPCS	33	1921	72	93 RAMACHANDRAN	CALCITE-G, ELAST WAVES	(INDIA)
NOL	TR	63-141	63	77*RAND, J.L.	STRESS WAVES IN AL	(NOL)
QAM		277	71	17 RANIECKI, B.	EFFECT OF DYNAMIC THERMAL EXPANSION	(POLAN)
JAP	39	4853	68	59 RAO, D.V.G.	LASER-INDUCED CHANGES IN SILICON	
LMSC	-6-78-69-3	69	56 RAUCH, J.E.	DEPTH-DOSE FOR FEBETRON E-BEAM		
JAM	36	181	69	14 RAUSCH, P.J.	SW PROPAG, STRAIN-HARDENING MTRL	(AEROS)
JAM	36	340	69	14 RAUSCH, P.J.	HEATING TIME EFFECT ON STRESS WAVES	(AEROS)
JAP	36	462	65	59 READY, J.F.	EFFECTS OF LASER RADIATION	
ACADE BK			71	58 READY, J.F.	EFFECTS OF LASER RADIATION	
ZAMP	19	473	68	34 REDDY, D.P.	SW IN THIN PRESTRESSED ROD	
ACADE BK			68	55*REED, R.D.	PHOTONS, LEPTONS INTO MATTER	
OPTIK	27	86	68	55 REIMER, L.	MONTE-CARLO-RECHUNGEN	(UMUNS)
IIT	TR	68-181	68	29*REINGOLD, E.M	SLAM CODE. IV. EXTRAS	AD840138
JCP	43	1050	65	81*RENERO, C.	COHESIVE ENERGY OF CU	(MEXIC)
JAP	41	3876	70	20*RENERO, C.	EQN FOR THE SHOCK ADIABAT	(MEXIC)
JAF	42	296	71	20*RENERO, C.	REDUCED HUGONIOTS	(MEXIC)
PHYSR108		196	57	73*RICE, M.H.	SW COMPRESSION OF 27 METALS	(LASL)
ACADE(BK)		1	58	73 RICE, M.H.	COMPRESSION SOLIDS BY SW (IN SEITZ VOL 6)	
JAP	34	364	63	83*RICE, M.H.	EP PROPERTIES OF IRON	(LASL)
JPCS	26	483	55	76 RICE, M.H.	SW P-V, ALKALI METALS	(LASL)
GEOPH	36	798	71	36 RICHARDS, P.G	ELASTIC WAVES, STRATIFIED MEDIA	
AIAAJ	4	1537	66	37*RILEY, M.B.	ELASTIC PROPS, COMPOSITES	(AFML)
DOVER BK		256	54	47 RINEHART, J.	METALS UNDER IMPULSIVE LOADS	
GE	R64SD13	64	28 RINEY, T.D.	CALCS, HYPERVEL IMPACT, PICWIC CODE	AD430606	
GE	R64SD64	64	8 RINEY, T.D.	IMPACT-CALC VS EXPT	AD606123	
GE	R64SD87	64	7*RINEY, T.D.	PEAK P IN HYPERVELOC IMPACT	AD452991	
PERGA(BK)	419	65	30 RINEY, T.D.	CALCS, HYPERVEL CRATERING (IN OSTRACH)		
ACADE(BK)		70	16 RINEY, T.D.	CALCS OF HYPERVEL IMPACT (IN KINSLOW 70)		
SSS	SR-267	70	110 RINEY, T.D.	STRESS EFFECTS, POROUS EARTH	AD712852	
DNA	27251	71	41 RINEY, T.D.	WAVES, POROUS GEOLOGIC COMPOSITES	AD732023	
ONR	ACR-184	70	52*ROBERTS, R.	FIFTH DETONATION SYMPOSIUM		
JPCS	31	619	70	94 ROBERTS, R.W.	BORN MODEL, Na, K HALIDES	(CWRU)

PREVB	3	1406	71	94*ROBERTS,R.W.	G OF ALKALI HALIDES	(UNC)
IIT	TR	68-181	68	29*ROBINSON,R.R	SLAM CODE. IV. EXTRAS	AD840138
JPCS	30	2091	69	76*ROGERS,F.J.	COMPRESSIBILITY, ALKALI METALS	(LRL)
JIMA	3	21	67	37*ROGERS,T.G.	COATED ELASTIC FIBER	(UNGTI)
JAP	38	876	67	75 ROHDE,R.W.	DISLOC VELOC IN NI CRYSTAL	(UUTAH)
JAP	40	2988	69	88 ROHDE,R.W.	SHOCK-LOADED TUNGSTEN AT 950 C	(SL)
JAP	42	878	71	87 ROHDE,R.W.	SW BEHAVIOR,TANTALUM,25 AND 900 C	(SL)
JCP	51	425	69	102*ROMO,P.C.	THERMAL EXPAN, POLYETHYLENE	(NARC)
JAM	31	223	64	37*ROSEN,B.W.	ELASTIC MODULI,FIBER COMPOSITES	(UPENN)
JGR	74	2727	69	109*ROSENBERG,J.	SHOCK COMPRESSION OF FELDSPARS	(CIT)
AFML	TR	68-266	68	30 ROSENBLATT,M	2D STEEP CODE- IMPACT	AD683055
DASA		2495	70	29 ROSENBLATT,M	SHEP CALCS, HE IN AL	(SHI) AD708784
AFML	TR	70-254	71	28 ROSENBLATT,M	STEEP CALC-AL CRATER FORMATION	AD721468
JAP	43	3191	72	56 ROSENSTEIN,M	2 MEV E-BEAM DOSE-DEPTH, POLYSTYRENE	
JPCS	27	267	66	84 ROTTER,C.A.	ULTRASONIC EQN STATE, IRON. 1.	(CASE)
JAP	39	3328	68	59 ROUSSEAU,D.L	LASER-CAUSED CHARGED PARTICLES	
ACADE	BK		68	55 ROY ,R.R.	PHOTONS,LEPTONS INTO MATTER	
PREV	164	929	67	66 ROYCE,E.B.	SW COMPRESS-ELECTRON CONFIG	(LRL)
JAP	39	4610	68	100*ROYCE,E.B.	SHOCK COMPRESS,ALUMINA	(SRI)
JAP	41	2443	70	75*ROYCE,E.B.	SW-INDUCED CHANGES, FE-CR-NI ALLOYS	(LRL)
ACADE(BK)		51	71	18*ROYCE,E.B.	SW IN SOLIDS-EXPT METHS (IN CALDIROLA)	
ACADE(BK)		80	71	18 ROYCE,E.B.	HI-P EQNS STATE FROM SW DATA: IN CALDIROLA)	
UCRL		51121	71	70 ROYCE,E.B.	GRAY-3 PHASE METAL EQN OF STATE	(UCRL)
JAP	42	1897	71	113*ROYCE,E.B.	YIELD STRENGTHS,SILICON	
JAP	25	528	54	32 RUBIN,R.J.	LONGIT WAVES IN PRESTRESSED ROD	(APL)
JAP	37	4758	66	50*RUDEMAN,M.H	IMMERSED-FOIL METHOD	(SRI)
PSS	1	507	67	95*RUOFF,A.L.	P DERIVS,ELAST CONSTS, NABR,KF	(CORNU)
JAP	38	4976	67	20 RUOFF,A.L.	LINEAR SHOCK VEL VS PARTICLE VEL	(CORNU)
JAP	40	3151	69	79*RUOFF,A.L.	P DEPENDENCE, AL ELASTIC CONSTANTS	(CORNU)
JAP	41	652	70	94*RUOFF,A.L.	P,T DEP,ELAST CONSTS RBCL,RBBR,RBI	(CORNU)
PREVB	3	1406	71	94 RUPPIN,R.	G OF ALKALI HALIDES	(UNC)
PREVB	3	1497	71	70 RUPPIN,R.	G FOR BORN-VON KARMAN LATTICES	(UNC)
JPCS	33	945	72	95 RUPPIN,R.	G OF LITHIUM HALIDES	(UNC)
JGR	76	1370	71	70 RYABININ,YU.	PLASTICITY RESULTING FROM PRESSURE	(USSR)
SOVPA	17	115	68	67 RYBAKOV,A.P.	EMPIRICAL EQNS-DENS,SOUND,PR IN SW	(USSR)
ACADE(BK)		181	64	25*SACK,S.	TENSOR CODE (IN ALDER 64 VOL 3)	
JPCS	26	1523	65	93*SAMARA,G.A.	BISMUTH COMPRESSIBILITY	(USAEL)
JCP	8	343	71	29 SAMEH,A.H.	DISCRETE APPROACH, E/P WAVES	(UILL)
JASA	27	550	55	32*SAUER,J.A.	ULTRASONIC DISPERSION IN RODS	(PENSU)
PERGA	BK		65	30*SCANLAN,R.H.	DEVELOPMENTS IN MECHANICS, VOL 2 PT 2	
APLET	13	279	68	57*SCHALLHORN,D	RESPONSE SOLIDS TO PULSED E-BEAM	(HDL)
IEEE	NS-	242	69	55 SCHALLHORN,D	E-BEAM DEPTH-DOSE PROFILES	
JAP	42	3463	71	57*SCHALLHORN,D	1D RESPONSE TO E-BEAM PULSE	(HDL)
JAP	42	3474	71	57*SCHALLHORN,D	TEMP-DEPENDENCE,SI,GE,INSB,E-BEAM	(HDL)
JGR	75	4035	70	42 SCHIFFMAN,R.	STRESS COMPOS,POROUS MEDIUM	(UCOLO)
JAP	37	3259	66	89*SCHMIDT,D.N.	SW PROPAG,POROUS SOLIDS	(SRI)
JAP	43	3367	72	91*SCHMIDT,D.N.	POROUS CU,FE,U,POLYURETHANE	(SRI)
JCM	5	286	71	36*SCHUIER,K.W.	WAVES IN LAMINATES, MIXTURES	(SL)
JAP	43	2204	72	51 SCHOCK,R.N.	QUASISTATIC DEFORMATION TO 5 KB	(LLL)
JPCS	26	537	65	95*SCHUELE,D.E.	P DERIVS,ELAST CONSTS, NACL,KCL	(CIT)

JAM	38	888	71	34*	SCHULTZ, A.B.	UNLOADING BDY, LONGIT PROPAGATION	(UILL)
WILEY(BK)		5	65	54	SCHUMACHER, B	LAWS FOR ELECTRON PENETRATION	(ORF)
JAP	40	4503	69	14	SCHWARTZ, M.	GRAPHIC DISPLAY, PLANE EP WAVES	(FA)
ASME (BK)			69	13	SCOTT, R.A.	TRANSIENT ANISOTR WAVES (IN MIKLOWITZ)	
RMP	35	231	63	54	SCOTT, W.T.	SMALL-ANGLE SCATTERING	
JAP	43	3367	72	91*	SEAMAN, L.	POROUS CU, FE, U, POLYURETHANE	(SRI)
ACADE BK			59	21	SEDOV, L.I.	SIMILARITY AND DIMENSIONAL METHODS	
IJNLM	6	615	71	17	SEDOV, A.	VISCO-ELASTIC WAVES	(IOWAS)
AFF	5	97	52	46	SELBERG, H.L.	WAVES FROM SPH, CYL CAVITIES	
JAP	37	4737	66	76*	SELVITELLA, J	HUGONOT EQN STATE, ALKALI METALS	(GCA)
BAPS	14	385	69	59	SERY, R.S.	(ABST) MANG PROP CHANGES, LASER IRRAD	(NOL)
JGR	74	1435	69	68	SHAPIRO, J.N.	SW TO ISOTHERMAL EQN STATE	(UCLA)
JGR	74	1439	69	68*	SHAPIRO, J.N.	G PARAMETER AND EQNS OF STATE	(UCLA)
JAP	37	2304	66	33*	SHARMA, O.P.	LASER IRRAD OF SOLID BAR	
JAP	42	5335	71	70*	SHARMA, Y.P.	ELAST CONSTS, AL, CU, NI	(INDIA)
GEOPH	7	144	42	46	SHARPE, J.A.	ELASTIC WAVES, EXPLOSIONS. I.	
JCP	51	425	69	102	SHEN, F.	THERMAL EXPAN, POLYETHYLENE	(NARÇ)
JAP	43	4348	72	102*	SHEN, M.	G OF CRYSTALLINE POLYETHYLENE	(UCALB)
BRL CR		36	71	26	SHEN, S.	MCDIT-3 CHARACTERISTICS CODE	AD724734
INTER BK			60	47	SHEWMON, P.G.	RESP METALS TO HIGH-VELOC DEFORMATION	
DASA		2164	68	11	SHIEH, R.C.	WAVES IN NONLIN STRAIN-HARDENING	AD679653
JAP	42	387	71	55	SHIMIZU, R.	MONTE CARLO CALCS	(OSAKA)
CESW	1	39	65	33*	SHKHINEK, K.N	WAVE PROPAG, FINITE BAR	
JASA	30	552	58	33*	SHOOK, C.A.	END-LOADED BAR. I. THEORY	(LEHIG)
MONO BK			68	12*	SHORT, N.M.	SHOCK METAMORPHISM, NATURAL MATERIALS	
JCM	3	454	70	38*	SIERAKOWSKI	SUPERPOSITION, WAVE PROPAG	(IOWA)
JAP	43	3191	72	56*	SILVERMAN, J.	2 MEV E-BEAM DOSE-DEPTH, POLYSTYRENE	
JAP	42	4592	71	103*	SIMHA, R.	PVT PROPS, AMORPHOUS POLYMERS	
JGR	69	1117	64	106	SIMMONS, G.	CCMPR WAVE VELOC IN MINERALS	(HARVU)
JGR	69	1123	64	106	SIMMONS, G.	SHEAR WAVES IN ROCKS. I.	
IEEE	53	1337	65	106	SIMMONS, G.	ULTRASONICS IN GEOLOGY	
PEPI	2	69	69	100	SIMMONS, G.	UNIVERSAL EQNS STATE, OXIDES, SILICATES (MIT)	
JGR	77	826	72	94*	SIMMONS, G.	ALPHA QUARTZ, ALK HALIDE PROPS	(MIT)
JETP	25	876	67	9*	SIMONEKO, V.	DISCONTINUITIES, SHOCK ADIABATS	(USSR)
DOKLA	3	738	58	102*	SINITSYN, M.V	T, SP HT OF PLEXIGLAS	(USSR)
SOVPHS	5	196	63	83*	SINITSYN, V.A	E-P WAVES IN IRON, STEEL	(USSR)
JAP	39	349	68	92	SIRDESHMUKH	G OF ZNO, BEO, ZNS, CDS	(INDIA)
JAM	24	59	59	32	SKALAK, R.	IMPACT OF CIRCULAR BAR	(COLUM)
JAP	41	4913	70	104*	SKOVE, M.J.	4TH ORDER ELAST CONSTS-FUSED QUARTZ	
PHYSR	57	744	40	62	SLATER, S.C.	G FOR INCOMPRESSIBLE METALS	(MIT)
PHYSR122		713	58	75*	SMITH, C.S.	ELAST CONSTS, CU, AG, AU TO 10 KBAR	(CASE)
JPCS	25	1279	64	95*	SMITH, C.S.	P DERIVS, ELAST CONSTS, LIF, NAF	(CIT)
JPCS	27	267	66	84*	SMITH, C.S.	ULTRASONIC EQN STATE, IRON. I.	(CASE)
JPCS	31	619	70	94*	SMITH, C.S.	BORN MODEL, NA, K HALIDES	(UNC)
JAP	40	4776	69	60*	SMITH, H.P.	CLEAN SURFACES BY LASER IRRAD	(UCALB)
JAP	43	2555	72	42	SMITH, R.E.	ELAST CONSTS, C FIBERS, COMPOSITES	(UCC)
JAP	37	3416	56	87	SOGA, N.	BULK MODULI, TA, W AT HIGH T	(BELL)
JGR	72	6754	67	66*	SOGA, N.	CORRESP STATES-A RESTRICTION	(LGO)
JIMA	3	21	67	37*	SPENCER, A.J.	COATED ELASTIC FIBER	(UNOTT)
PREV	98	1597	55	54	SPENCER, L.V.	THEORY OF ELECTRON PENETRATION	

NOLTR 72-274

JGR	75	2073	70	100	SPETZLER, H.	MGO TO 8 KBAR, 800 K	(CIT)
JPCS	33	1727	72	96	SPETZLER, H.	NACL-DATA TO 8 KBAR AND 800 C	(SL)
JAP	42	3667	71	36	SPIELVOGEL, L.	PLANE WAVES IN LAYERED MEDIA	
JGR	76	7052	71	100*	SPRIGGS, R.M.	ELAST MODULI-SINTERED NI OXIDE	(LEHIG)
JPCS	33	1921	72	93*	SRINIVASAN, R.	CALCITE-G, ELAST WAVES	(INDIA)
NOL	TR	70-141	70	74*	STECHER, F.P.	LISTS OF PROPERTIES, METALS, PLASTICS	(NOL)
IJES	4	483	66	42*	STEEL, T.R.	CONSTIT EQNS, INTERACTING CONTINUA	(UNWC)
QJMAM	20	57	67	42	STEEL, T.R.	INTERACTING CONTINUA	(UNWC)
NCSU	TR	70-11	70	80*	STEELE, R.S.	EXPT-PLASTIC WAVES, 1100F ALUMINUM	AD717328
UCRL		51246	72	44	STEFFAN, K.L.	SPALL THRESHOLDS, 6061T6 ALUMINUM	(LLL)
SPSS	12	1312	70	92*	STEPANOV, A.V.	T DEPEND, ELAST CONSTS OF TE	
JAM	37	1190	70	39*	STERN, M.	WAVES, FIBER-REINF MTRLS	(UTEXA)
JAM	38	8	71	40*	STERN, M.	DIFFUSING CONTINUUM THEORY	(UTEX)
JAM	26	528	59	37	STERNBERG, E.	SW PROPAG, NONHOM ELAST MEDIA	(BROWN)
PREV	126	620	62	54*	STERNGLASS, E.	1-10 KEV RANGE INTERPRETATION	(WRL)
JAP	42	5665	71	80	STEVENS, A.L.	DYNAMIC FRACTURE, ALUMINUM	(SL)
JAP	43	988	72	44*	STEVENS, A.L.	CONTINUUM MEASURES, SPALL DAMAGE	(SL)
BAPS	13	DEC	68	59	STEVERDING, B.	(ABST) SHOCK GENR, PULSED LASER	(REDST)
PPS	92	1090	67	94*	STRATHEN, R.E.	3RD ORDER CONSTS, KCL, NACL, LIF	(UEXET)
LOCKH	SB-63-	31	63	2	STROMER, P.R.	BIB-SW PROPAG IN SOLIDS	AD419449
SSP	13	81	62	47*	STRONG, H.M.	METALS AT HIGH T, P	(GE)
JAM	35	408	68	35	SUN, C.T.	T-HARM WAVES, STRATIFIED MEDIUM	(NWU)
JAM	35	467	68	35	SUN, C.T.	CONTINUUM THEORY, LAMINATED MEDIUM	(NWU)
JAM	35	689	68	35*	SUN, C.T.	VIBRATIONS OF LAMINATED BODY	(NWU)
JCM	3	454	70	38	SUN, C.T.	SUPERPOSITION, WAVE PROPAG	(IOWA)
PREVB	3	4007	71	80	SUZUKI, T.	2ND, 3RD ORDER CONSTS, AL, PB	(UILL)
SAMSO	TR	70-417	70	36	SVE, C.	OBLIQUE THERMOELAST WAVES	AD715895
JPHYD	4	1077	71	20	SWAN, G.W.	THEORY FOR US-UP SLOPE	(WSU)
SSP	11	41	60	47	SWENSON, C.A.	PHYSICS AT HIGH PRESSURE	(ISU)
JPCS	29	1337	68	67	SWENSON, C.A.	CUBIC SOLIDS	(GBRIT)
WASHU		69-3	69	79*	SWIFT, R.P.	AL+PLANE CYLIN STRESS WAVES	AD695703
JGR	71	3985	66	65	TAKEUCHI, H.	EQNS STATE FROM SW EXPTS	(CALUB)
JAP	43	4016	72	19	TASI, J.	NONLIN SHOCK GROWTH IN 1-D LATTICE	(SUNY)
JCM	5	456	71	40	TAUCHERT, T.	EXPTS-STRESS WAVES, WOVEN FABRICS	(UKENT)
AIAAJ	9	1492	71	40	TAUCHERT, T.	STRESS WAVES IN COMPOSITE RODS	(UKENT)
IJNLM	6	27	71	21	TAULBEE, D.B.	SIMIL SOLNS, IMPACT PROBS	(SUNYB)
CDRC		RC329	42	31	TAYLOR, G.I.	PLASTIC WAVE IN IMPACTED WIRE	
JAP	34	364	63	83	TAYLOR, J.W.	EP PROPERTIES OF IRON	(LASL)
JAP	36	3146	65	83	TAYLOR, J.W.	DISLOC DYNAMICS AND YIELDING	(LASL)
ACADE(BK)		293	70	74*	TAYLOR, J.W.	EQN OF STATE FROM SW WORK (IN KINSLOW)	
WSU	SDL	70-02	71	70*	TAYLOR, S.M.	EQN OF STATE OF SOLIDS. 4. (BRL)	AD719307
JCM	5	130	71	40*	TAYLOR, S.M.	SW PARAMS, 2-COMPON MIXTURE	(WSU)
PREV	153	765	67	75*	THOMAS, J.F.	THRMAL PROPS-NOBLE METAL ANHARMONY	(UILL)
BJAP	15	883	64	55*	THOMAS, R.N.	5-30 KEV RANGE-ENERGY. I.	(UCAMB)
BJAP	15	1283	64	55*	THOMAS, R.N.	5-30 KEV RANGE-ENERGY. II.	(UCAMB)
JMM	6	759	57	3	THOMAS, T.Y.	DECAY OF WAVES IN ELASTIC SOLIDS	(INDIU)
PNAS	57	1195	67	66	THOMAS, T.Y.	HYDROSTATIC P EFFECT, TENSILE STRENG	(INDU)
PNAS	60	1102	68	67	THOMAS, T.Y.	STRESS-STRAIN RLATIONS, CRYSTALS	AD680278
AFSWCTDR	62-134	62		75*	THOMER, G.	SW COMPRESSION OF MG, LUCITE, PE	AD291568
SC	RR-66-601	67		23*	THOMPSON, R.J.	WONDY-1D E/P COMPUTER CODE	(SI)

JGR	74	981	69	68 THOMSEN, L.	HIGH-T EQN STATE OF SOLIDS	(LAMON)
JPCS	31	2003	70	69 THOMSEN, L.	4TH ORDER ANHARMONIC EQN STATE	(LAMON)
JGR	76	1342	71	17 THOMSEN, L.	SHEAR MODULI, HIGH P+T	(FRANC)
SC	RR 66-602	67	24 THORNE, B.J.	TOODY 2-D COMPUTER CODE	(SL)	
SC	RR-70-571	71	30 THORNE, B.J.	COMPARISON-NUMERICAL TECHNIQUES, SW	CALC	
ACADE (BK)	1	64	8 THURSTON, R.N	WAVE PROPAG, FLUIDS, SOLIDS (IN MASON	VIA, 63)	
IEEE	53	1320	65	64 THURSTON, R.N	ULTRASONIC DATA AND TD OF SOLIDS	(BELLT)
JAP	36	1624	65	104*THURSTON, R.N	ELASTIC MODULI, QUARTZ	(BELLT)
LASL	LA	4013	68	44 THURSTON, R.	SPALL CRITERIA FOR NUMERICAL CALCS	(LASL)
MCGRA	BK	416	34	4 TIMOSHENKO, S	THEORY OF ELASTICITY	(UMICH)
JAM	36	497	69	38 TING, T.C.T.	WAVE FRONT ANALYSIS	(UILL)
JAM	38	441	71	34 TING, T.C.T.	INIT SPEED, E/P BOUNDARIES IN ROD	(UILL)
AFIT	TR	69-7	69	39 TORVIK, P.J.	SW PROPAG, COMPOSITE MTRL	AD690504
JCM	4	296	70	39 TORVIK, P.J.	SW PROPAG, COMPOSITE MTRL	(AFIT)
JPCS	23	395	62	63*TOSI, M.P.	MIE-GRUNEISEN, HILDEBRAND EQNS	(ANL)
JAP	42	878	71	87*TOWNE, T.L.	SW BEHAVIOR, TANTALUM, 25 AND 900 C	
HDP	11/2	153	62	6 TRUELL, R.	ULTRASONIC STRESS WAVES IN SOLIDS	(GTBRI)
BAMS	58	577	52	3 TRUESDELL, C.	REVIEW OF MURNAGHAN BOOK	
ARMA	8	263	61	5 TRUESDELL, C.	THEORY, WAVES IN FINITE ELAST STRAIN	(JHU)
JAP	34	172	63	43*TRULIO, J.G.	SPALL MECHANISM IN LUCITE	(BOEIN)
JGR	71	2601	66	9 TSAI, D.H.	SHOCK PROPAG IN CUBIC LATTICE	(NBS)
JCM	3	500	69	38 TSOU, F.K.	HUGONIOT OF COMPOSITES	(DREXE)
AFML	TR 69-152	70	39 TSOU, F.K.	EXPT-HUGONIOT, 1D FIBER-REINF	AD716560	
JAP	43	957	72	41*TSOU, F.K.	STEADY SW, 1D FIBROUS COMPOS	(DREXE)
JASA	27	550	55	32 TU, L.Y.	ULTRASONIC DISPERSION IN RODS	(PENSU)
IJFM	4	431	68	44 TULER, F.R.	TIME-DEP OF DYNAM FRACTURE	(SL)
JAP	42	5665	71	80*TULER, F.R.	DYNAMIC FRACTURE, ALUMINUM	(SL)
DNA	2740T	71	44 TULER, F.P.	TENSILE STRESS SPALL CRITERION	(ETI)	
WSU	SDL 70-02	71	70*TUNG, C.T.	EQN OF STATE OF SOLIDS. 4. (BRL)	AD719307	
JAM	21	63	54	4*TUPPER, S.J.	STEEL CYL HITTING RIGID TARGET	(BROWN)
JAM	38	888	71	34 TUSCHAK, P.A.	UNLOADING BDY, LONGIT PROPAGATION	(OSU)
JAM	37	339	70	60*TZUNG, F.	STRESS FROM IMPULSIVE RADIATION	(UCALS)
DOKLA	5	317	60	63*URLIN, V.D.	INTERPOL EQN STATE, METALS	(USSR)
JETP	15	477	62	63*URLIN, V.D.	COMPRESSION OF POROUS AL, CU, PB, NI	(USSR)
JETP	22	341	66	65 URLIN, V.D.	HIGH-P MELTING IN SW	(USSR)
JAP	40	3962	69	20 URTIEW, P.A.	REFL SW VEL VS PART VEL IN SOLIDS	(LRL)
UCRL	51109	71	17*URTI EW, P.A.	SHOCK WAVES, METAL VAPORIZATION	(UCRL)	
JPCS	31	2329	70	74 VAIDYA, S.N.	COMPRESSIB, 18 METALS TO 45 KBAR	(UCLA)
JPCS	32	2545	71	76 VAIDYA, S.N.	ALKALI METALS TO 45 KBAR	(UCLA)
JPCS	33	1377	72	74 VAIDYA, S.N.	22 ELEMENTS TO 45 KBAR	(UCLA)
JMP	44	227	65	8 VALANIS, K.C.	WAVES, LINEAR VISCOELAST SOLIDS	(ISU)
JCM	3	454	70	38*VALANIS, K.C.	SUPERPOSITION, WAVE PROPAG	(IOWA)
SPSS	12	1312	70	92 VALIEV, A.A.	T DEPEND, ELAST CONSTS OF TE	
UCRL	50108	66	74 VAN THIEL, M.	COMPENDIUM OF SHOCK WAVE DATA	(UCRL)	
JAP	40	893	69	79*VAN THEIL, M.	DYNAM YIELD, 2024-T4 AL AT 313 KBAR	(LRL)
JAP	40	3776	69	79*VAN THEIL, M.	UNLOADING WAVES, 2024-T4 AL	(LRL)
JMPS	13	17	65	8 VARLEY, E.	NON-LINEARITY EFFECT, ACCEL WAVE	(NPL)
ARMA	19	215	65	8 VARLEY, E.	ACCEL FRONTS, VISCOELAST MTRLS	(UNOTT)
ASME (BK)		69	13 VARLEY, E.	MODUL SIMPLE WAVES (IN MIKLOWITZ 69)		
SOVSS	5	653	63	64 VASHCHENKO, V	DERIVING GRUNEISEN CONSTANT	(USSR)
JAP	38	3271	67	43*VENABLE, D.	DETERMINING DYNAMIC TENSILE PROPS	(LASL)

JAP	39	3222	68	92*VENABLE,D.	SHOCK INDUCED TRANSITION-ANTIMONY	(LASL)
DOKLA	16	322	71	87*VERESHCHAGIN	TA MELTING CURVE TO 60 KBAR	(USSR)
PREVB	2	2167	70	95 VETELINO,J.F	LATTICE DYN, CS HALIDES	(UMAIN)
PREVB	3	4398	71	95*VETELINO,J.F	LATTICE DYN,ALKALI HALIDES	(UMAIN)
CREND270A	1440	70		91 VINH TUONG,M	CONSTS ELAST,FIBER UNIDIRECTIONNELLES	
JETP	23	777	66	95 VORONOV,F.F.	P EFFECT,ELAST PROPS, RBCL, RBI	(USSR)
IIT	TR 68-181	68		29 WACHOWSKI,A.	SLAM CODE.III. VERSION 3	AD840137
IIT	TR 68-181	68		29*WACHOWSKI,A.	SLAM CODE. IV. EXTRAS	AD840138
PHYSR122	1754	61		100 WACHTMAN,J.B	YOUNGS MOD VS T, OXIDES	(NBS)
JAP	33	922	62	104 WACKERLE,J.	SW COMPRESSION OF QUARTZ	(LASL)
JPS	7	201	69	103 WADA,Y.	G,THERMAL PROPS OF POLYMERS	(UTOKY)
AIA/J	8	2147	70	28*WAGNER,M.H.	SHAPE CALCS, IMPACT, LAMINATE	(SHI)
JAP	40	2639	69	92*WALKER,F.E.	DYNAMIC COMPRESSION OF TNT	(LRL)
RMP	37	57	65	8 WALLACE,D.C.	DYNAMICS OF STRESSED CRYSTALS	(SL)
PREV	162	776	67	66 WALLACE,D.C.	THERMOELASTICITY, STRESSED MTRLs	(SL)
JAM	34	937	67	60 WALSH,E.K.	1D WAVES IN ELAST NONCONDUCTORS	(MELLO)
JASA	41	1320	67	10*WALSH,E.K.	ACCEL WAVES IN ELASTIC BODIES	(CASE)
JAP	42	1098	71	90 WALSH,J.B.	BJLK MOD P DERIV, POROUS MTRLs	
PHYSR	97	1544	55	73 WALSH,J.M.	EQN STATE METALS,SW MEASUREMENTS	(LASL)
PHYSR108	196	57		73 WALSH,J.M.	SW COMPRESSION OF 27 METALS	(LASL)
ACADE(BK)	1	58		73*WALSH,J.M.	COMPRESSION SOLIDS BY SW (IN SEITZ VOL 6)	
GA	5119	64		30 WALSH,J.M.	THEORY, HYPERVEL IMPACT	AD436251
GAMD	8497/2	68		30 WALSH,J.M.	EULERIAN E/P METH. 2. FD EQNS	AD678566
ACADE(BK)	70			16*WALSH,J.M.	THEORY OF IMPACT (IN KINSLOW 70)	
SSS	3SR-350/1	71		25*WALSH,J.M.	HELP-2D E/P EULERIAN CODE	AD726459
SSS	3SR-350/2	71		25*WALSH,J.M.	HELP-FORTRAN LISTINGS	AD726460
SSS	3SR-201	71		25*WALSH,J.M.	HELP CALCS-ARMOR PENETRATION	AD725998
UCRL	51102	71		18 WALTON,O.R.	A WAVE PROPAGATION MODEL	(UCRL)
ARMA	22	79	66	65 WANG,C.C.	TD OF NON-LIN MTRLs	(JHU)
JGR	74	1451	69	109 WANG,C.Y.	EQN OF STATE, PERICLASE	(UCBER)
NOL	TR 71-208	72		103 WARFIELD,R.W	BULK MOD OF POLYETHYLENE OXIDE	(NOL)
MCGRA	BK	63		52*WARSCHAUER,D	SOLIDS UNDER PRESSURE	(HARVU)
NOL	TR 63-141	63		77 WASER,W.H.	STRESS WAVES IN AL	(NOL)
JAP	40	2639	69	92 WASLEY,R.J.	DYNAMIC COMPRESSION OF TNT	(LRL)
QJMAM	22	261	68	14 WATERSTON,R.	1-D SW AND ACCEL FRONTS	(USTRA)
IJSS	6	1157	70	84 WATSON,H.	DYNAMIC STRESS-STRAIN FOR IRON	(SMU)
NOL	TR 66-42	66		43*WATT,J.W.	SPALLATION-EFFECT OF STRENGTH PROPAD641874	
KN	70-59(R)	70		38 WEBSTER,L.	UNIDIR FIBERS, FINITE ELEM METHOD	(KN)
KN	70-760(R)	70		38 WEBSTER,L.	WAVES IN COMPOSITES	(KN)
JGR	77	826	72	94 WEIDNER,D.J.	ALPHA QUARTZ,ALK HALIDE PROPS	(MIT)
BAPS	13	DEC	68	59*WERKHEISER,A	(ABST)SHOCK GENR, PULSED LASER	(REDST)
PHILM	12	157	65	93*WHITE,G.K.	GE,SI THERMAL EXPAN AT LOW TEMP	(AUSTR)
JAP	37	430	66	100 WHITE,G.K.	GRUNEISEN PARAMETER OF MGO	(BELLT)
JASA	27	310	55	35 WHITE,J.E.	ELASTIC WAVES IN LAMINATES	
JAM	14	A337	47	31 WHITE,M.P.	PERMANENT STRAIN,IMPACTED BAR	(IIT)
JAM	15	25	48	4 WHITE,M.P.	PROPAG,PLASTICITY IN 1D COMPRESSION(UMASS)	
JAM	16	39	49	4 WHITE,M.P.	IMPACT OF MATERIAL WITH A YIELD POINT	
JAP	34	2123	63	59 WHITE,R.M.	EP WAVES FROM LASER BEAM	(GE)
JAP	34	3559	63	59 WHITE,R.M.	ELASTIC WAVES FROM SURFACE HEATING	
JAP	42	4156	71	17 WHITESIDES,J	VISCOUS EFFECTS, HYPERVEL IMPACT	(GWU)

NOLTR 72-274

AIAAJ	4	1537	66	37	WHITNEY, J.M.	ELASTIC PROPS, COMPOSITES	(AFML)	
SAMSO	TR-69-102	69	35	WHITTIER, J.S	DISPERSIVE PULSE PROPAGATION	AD685712		
JAM	36	485	69	35	WHITTIER, J.	DISPERSIVE PULSE, COMPOSITE, EXPTS	(AEROS)	
JAM	34	931	67	10*	WIERZBICKI, T	PLANE E-P WAVES AT FINITE STRAIN	(POLAN)	
ACADE(BK)		211	64	24	WILKINS, M.L.	CALC OF E-P FLOW	(IN ALDER 64 V.3)	
UCRL		7322	69	24	WILKINS, M.L.	CALC OF ELASTIC-PLASTIC FLOW	(LRL)	
JCP	5	406	70	24	WILKINS, M.L.	FD SCHEME FOR 2-D PROBS	(LRL)	
JASA	30	308	58	48	WILLIAMS, J.	ULTRASONIC VELOC MEAS IN SOLIDS	(IMPER)	
JAP	41	360	70	15*	WILLIAMS, R.F	PLANE STRESS WAVES IN SOLIDS	(WSU)	
JAP	42	457	71	70*	WILLIAMS, R.F	CONSTIT RELS FROM EXPT DATA		
JAM	18	379	51	4*	WOLF, H.	PLASTIC-WAVE PROPAG EFFECTS	(BROWN)	
DASA		2404	70	45*	WONG, F.S.	SPH WAVES IN INELASTIC MTRLS	AD703295	
JAM	19	521	52	3	WOOD, D.S.	LONGIT PLANE E/P STRAIN WAVES	(CIT)	
AIAAJ	7	2158	69	34	WOOD, E.R.	DYN RESPONSE, FINITE BARS	(GIT)	
UCRL		50621	69	57	WOODRUFF, L.	METAL RESP, 2MEV E-BEAM	(LRL)	
JAM	38	363	71	44	WOODRUFF, L.	E-BEAM MELTING, SPALL METALS	(LRL)	
JAP	43	4799	72	96*	WORLTON, T.G.	NACL, CSCL TO 32 KBAR	(ANL)	
JAP	43	4348	72	102	WU, C.K.	G OF CRYSTALLINE POLYETHYLENE	(UCALB)	
PRINU	TR-27	71	41	WU, T.M.	ELASTIC WAVES IN FIBER COMPOSITES	AD731833		
AIAAJ	9	2451	71	18	YANG, J.C.S.	E/P WAVE CANCELLATION	(NOL)	
PHYSR108		196	57	73*	YARGER, F.L.	SW COMPRESSION OF 27 METALS	(LASL)	
AACTA	14	317	69	68	YEH, G.C.K.	COMPARE ELASTICITY FORMULATIONS	(TRW)	
JAP	42	1101	71	40	YEH, R.H.T.	BOUNDS ON ELASTIC MODULI		
SC	RR-69-656	70	27*	YOUNG, E.G.	MAT2D-STRUCTURAL RESPONSE CODE	(SL)		
JAP	42	4156	71	17*	YUAN, S.W.	VISCOUS EFFECTS, HYPERVEL IMPACT	(GWU)	
JETP	22	446	66	36	ZABABAKHIN, E	SHOCKS IN LAYERED SYSTEMS	(USSR)	
JETP	25	876	67	9	ZABABAKHIN, E	DISCONTINUITIES, SHOCK ADIABATS	(USSR)	
JCP	5	517	70	15*	ZABRODIN, A.V	HYDRODYN EFFECTS, COLLIDING SOLIDS	(USSR)	
URS		668	10	67	107	ZACCOR, J.V.	1D SW CALCS, GROUND SHOCK	AD664121
INTER BK			60	47*	ZACKAY, V.P.	RESP METALS TO HIGH-VELOC DEFORMATION		
JAM	32	143	65	59	ZAKER, T.A.	STRESS WAVES, ELASTIC SOLID, BY HEAT		
DOKLA	14	65	69	68*	ZAMYSHLYAEV	SHOCK ADIABATS OF SOLIDS	(USSR)	
USPEK	13	778	71	17	ZAREMBO, L.K.	NONLIN PHENOMENA IN ELASTIC WAVES	(USSR)	
GE	R66SD31	66	97	ZAVITSANOS, P	VAPORIZATION OF PYROLYTIC GRAPHITE	(GE)		
JETP	5	1287	57	62	ZELDOVICH, YA	EQN OF STATE EXPTS	(USSR)	
DOKLA	3	938	58	102	ZELDOVICH, YA	T, SP HT OF PLEXIGLAS	(USSR)	
NSE	27	190	67	55	ZERBY, C.P.	E-TRANSPORT THEORY		
CONBU BK		257	71	71	ZHARKOV, V.N.	EQNS STATE, SOLIDS, HIGH P,T	(USSR)	
JASA	47	795	70	91	ZIMMER, J.E.	ELAST CONSTS, ULTRASONICS, UNIDIR FIBERS		
SOVSS	5	653	63	64*	ZUBAREV, V.N.	DERIVING GRUNEISEN CONSTANT	(USSR)	
JASA	27	1054	55	62*	ZWOLINSKI, B.	ENTROPIC EQNS STATE, SW	(SRI)	

V. INDEX OF SOME SPECIAL TOPICS

THESE ARE TOPICS NOT READILY FOUND FROM THE TABLE OF CONTENTS.

CYLINDRICAL WAVES

SELBERG (1952,46) WAVES FROM CAVITIES
JORDAN (1962,4) FINITE CYLINDER
EASON (1963,46) WAVES FROM CAVITIES
MEHTA + DAVIDS (1966,9) DIRECT NUMERICAL ANALYSIS
FOWLES (1970,15) CONSERVATION RELATIONS
NAKANO (1970,16) DIFFRACTION BY CYLINDRICAL CAVITY

ACCELERATION WAVES

HILL (1962,6)
VARLEY (1965,8) VISCOELASTIC MATERIALS
VARLEY + DUNWOODY (1965,8) EFFECT ON NON-LINEARITY
GURTIN + WALSH (1967,10) EXTERNALLY-INDUCED WAVES
NAGHDI, ET AL (1969,13) E/P MATERIALS

UNLOADING WAVES

BLAND (1964,7) INCLUDES SPHERICAL TENSION
FINE (1967,10) E/P WAVES
LYSNE + BOADE (1969,51) RELEASE ADIABATS
FULLER + PRICE (1969,75) AL, MG TO 200 KBAR
PASTINE + OKEEFFE (1970,15) WAVE VELOCITIES FOR CU AND AL
MORLAND (1970,46) SPHERICAL WAVES

HYPERVELOCITY IMPACT

HUANG + DAVIDS (1963,5) ELEMENTARY ANALYSIS
HEYDA + RINEY (1964,7) PEAK AXIAL PRESSURES
RINEY + HEYDA (1964,8) CALCULATION VS EXPERIMENT
KINSLOW (1970,16) GOOD BOOK
WHITESIDES + YUAN (1971,17) VISCOUS EFFECTS
SEE ALSO COMPUTER CODES; PP 25-30.

HOPKINSON BAR

HOPKINSON (1914,31) THE ORIGINAL PAPER
LANDON + QUINNEY (1923,31) EXPERIMENTS
DAVIES (1948,31) CRITICAL STUDY

THERMOELASTICITY

DERESIEWICA (1957,3) PLANE WAVES
LESSER (1959,4) THERMAL SHOCK
FLAVIN + GREEN (1961,5) INITIALLY-STRESSED MEDIUM.
CHADWICK (1962,5) PLATES, RODS
ACHENBACH (1964,7) APPROXIMATE TRANSIENT SOLUTIONS
BOLEY + HETNARSKI (1968,12) DISCONTINUITY PROPAGATION
RAUSCH (1969,14) EFFECT OF HEATING TIME
SEE ALSO PP 59-60.

BAUSCHINGER EFFECT

JONES + HOLLAND (1964,86) MILD STEEL
ABEL + MUIR (1972,72) DISCONTINUOUS YIELDING

METHOD OF CHARACTERISTICS

BURNS (1967,26) MCDIT 1
 CHOU + MORTIMER (1967,10) 1-D ELASTIC WAVES
 CHOU + BURNS (1967,10) CALCULATIONS FOR AL AND CU
 SHEN + CHOU (1971,26) MCDIT/3 CODE

LASER INTERFEROMETER

PERRY (1969,57) RESPONSE OF AL
 BARKER (1972,50) REVIEW

GRUNEISEN PARAMETER

GRUNEISEN (1912,61) THE ORIGINAL PAPER
 SLATER (1940,62) INCOMPRESSIBLE METALS
 GILVARRY (1956,62) UNDER FINITE STRAIN
 GILVARRY (1956,62) LINDEMANN AND GRUNEISEN LAWS
 GILVARRY (1956,62) FUSION CURVE AT HIGH P
 BARRON (1957,62) FOR EQN OF STATE
 VASHCHENKO + ZUBAREV (1963,64) FREE-VOLUME THEORY
 ANDERSEN (1965,63) METALS
 PASTINE (1965,63) MONATOMIC CUBIC CRYSTALS
 KOPYSHEV (1965,63) THOMAS-FERMI APPROXIMATION
 WHITE + ANDERSON (1966,100) MGO
 KEY (1967,66) ANISOTROPIC MATERIALS
 BARKER (1967,103) POLYMERS
 BRUGGER + FRITZ (1967,66) FROM ELASTIC DATA
 BANSIGIR (1968,67)
 PASTINE (1968,67) V DEPENDENCE
 ANDERSON (1968,67) V DEPENDENCE DEPENDS ON P
 MCKENNA + PASTINE (1968,79) V DEPENDENCE FOR AL
 SIRDESHMUKH (1968,92) ZNO, BAO, ZNS, CDS
 KNOPOFF + SHAPIRO (1969,68) RELATION TO EQNS OF STATE
 WADA, ET AL (1969,103) POLYMERS
 BARKER + CHEN (1970,69) FROM THERMAL CONDUCTIVITY
 VETELINO, ET AL (1970,95) CSCL, CSBR, CSI
 HARRIS (1971,70) POROUS MATERIALS WITH E DEPOSITION
 RUPPIN (1971,70) BORN-VON KARMAN LATTICES
 BROADHURST + MOPSIK (1971,103) CALC, N-ALKANES
 GAUSTER (1971,80) LOW-T DATA FOR SI, AL
 PRIETO (1972,72) V DERIVATIVE AT ZERO P
 RUPPIN (1972,95) LITHIUM HALIDES

MELTING

BABB (1963,64) SIMON EQN RELATING P AND MELT T
 KORMER (1965,96) KACL, KCL TO 700 KBAR
 KRAUT + KENNEDY (1966,65,TWO) AT HIGH P
 LUEDEMANN + KENNEDY (1968,76) LI, NA, K, RB TO 80 KBAR
 McLACHLAN (1971,70) P EFFECT
 FATEEVA + VERESHCHAGIN (1971,87) TA TO 60 KBAR